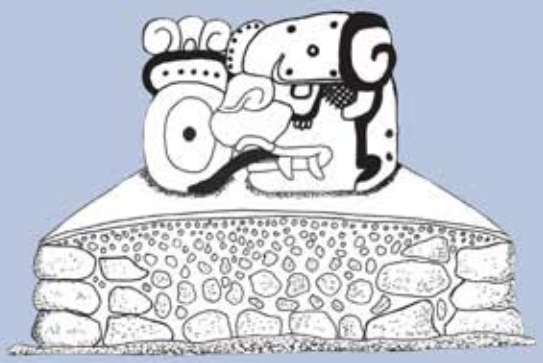
The Roads In-Between



Causeways and Polyagentive Networks at
Ichmul and Yo'okop, Cochuah Region, Mexico

Johan Normark

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Department of Archaeology and Ancient History
Göteborg University
2006

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Abstract

This dissertation has two aims: (1) To characterize and abandon the humanocentric archaeology that relies upon quasi-objects and to develop the polyagentive archaeology that relies upon actualizations of the virtual. (2) To exemplify the latter approach by studying how causeways (sakbeob) in the Maya area relate to temporality and materiality at, and around, the two neighbouring sites of Ichmul and Yo'okop in the Cochuah region of southeast Yucatan and west-central Quintana Roo in Mexico.

It is suggested that transcendental, hierarchical and static quasi-objects commonly used in archaeology (for example culture and practice) are not suitable ways to begin our approach to the archaeological data. Polyagentive archaeology works from an ontology based in temporal movement rather than one with the basis in substance (classic materialism) or social constructions (idealism). The basis of this dissertation is to be found in Bergson's ideas of an unbreakable duration, a virtual multiplicity which our mind breaks down to static fragments (actual multiplicities) from which we reconstruct the world through representations and social constructions.

Polyagency is a term for what generates becomings, differentiations and repetition. It lies in-between the virtual and the actual. This intensive process produces individuations that are called polyagents (actualisations). Quasi-objects are our way of trying to find patterns among these actualisations. This is an actual ideology which consists of both arbolic thought and nomadic thought. However, the unity comes from within the virtual and not from transcendent structures. As a contrast, the virtual ideology is directly connected to matter and the immanent.

Deleuze's reworking of Bergson decentralizes the importance of the human being. It heads toward a posthuman condition and a neo-materialist and neo-realist ontology where the archaeological object is separated from its past human agent. However, the virtuality and polyagency of the object has continued unbroken from the past to the present. Materialities are part of a polyagentive phylum of increasing differentiation of artefacts. The object is also seen as an index and a prototype of other materialities where the human being is reduced to being a catalyst in polyagentive networks. This reflects a relationship between polyagents in nested rhizomatic networks.

Ichmul and Yo'okop have been investigated through surveys, mapping, test pit excavations and ceramic dating. Yo'okop has four documented causeways and Ichmul has five causeways. The causeways of the two sites seem to have been contemporaneous, constructed during the Terminal Classic period (A.D. 800 – 1100). Particular focus is set on five polyagentive assemblages; the triadic causeways and the aligned causeways of Ichmul; and the beads-on-a-string causeways, the non-aligned causeway and the unfinished causeway of Yo'okop. A local approach is used and it is shown that the material nodes around Ichmul evolved very differently compared to the ones at Yo'okop.

Rather than seeing the causeways as cultural reflections of either centralization, social organization, cosmological maps or ceremonial avenues as humanocentric archaeology has done (and thus limiting their studies to the past), the polyagentive analyzes see them as de-cultured actualized polyagents that have initiated, and still initiate, tendencies in their vicinity.

Keywords: agency, architecture, becoming, Bergson, causeway, Cochuah, culture critique, Deleuze, difference, duration, event horizon, evolution, humanocentrism, ideology, in-between, index, materiality, Maya, Mexico, multiplicity, neo-materialism, network, polyagency, polyagent, posthumanism, practice, rhizome, road, sakbe, settlement archaeology, technoscience, temporality, Terminal Classic, virtuality

Acknowledgements

I cannot remember when I first became interested in the Maya area, but I guess it began in the fascination of hidden pyramids strangled by a steaming hot jungle, a lost civilization that had mysteriously disappeared. Many are those whose interest probably began with such romanticized or stereotypical views. For me, it reminded me of my other long-term interest, that of palaeontology and the repetitive character of mass extinctions of flora and fauna. I quickly got over such illusions and over the years my interest has turned more to scrutinize what we actually can say about material remains.

No matter how my interest began, my first fieldwork in the Maya area was at Baking Pot in Belize in 1997. It continued at nearby El Pilar in 1998, 2000 and 2001. After working at Naranjal in the Northern Lowlands in 2001, I decided to change territory but maintain my topic on causeways. I joined the CRAS project in 2003 and also worked there in 2004 and 2005. It is the result from these last three seasons and the earlier work of the PAY project that lies as the empirical foundation for the thesis. Along the course of my road towards this thesis, I have received help from several people and institutions whom I shall acknowledge, since without them, this thesis would not have emerged in its present form.

There is one person that means everything to me. I could not have done all this without my dear wife *Dorthe* who has always been supportive, evaluating my thoughts from a non-archaeological perspective. She has been patient and listened to my thoughts on multiplicities and their relevance for archaeology. Even if we in some periods have been separated from each others for far too long, she has still been my own "metaphysics of presence" along my road in-between undergraduate and Ph.D. Without her, this actual book would still have been very much virtual.

When it comes to the archaeological side of the road that has ended with this book, I begin by acknowledging five people that have been the most important ones for making the becoming of this dissertation possible: my thesis advisor *Per Cornell* and my colleague *Fredrik Fahlander* at the Department of Archaeology and Ancient History in Göteborg; my project directors *Justine Shaw* of the College of the Redwoods in Eureka, CA, and *Dave Johnstone* of Humboldt State University in Arcata, CA; and my colleague and friend *Alberto Flores Colin* of ENAH in Mexico City. I am grateful to all of your help.

Per has partly helped me with the theoretical stance although I am totally responsible for the Bergsonian and Deleuzian currents in the dissertation. I first came in contact with him when I wrote my B.A. thesis in 1996-1997, and my fieldwork with him at El Pichao in Argentina in 1998 was an exciting experience. Fredrik has given important critical comments on both my dissertation, my earlier licentiate thesis and various articles. He has inspired me to search for alternative interpretations. Per and Fredrik's microarchaeological seminars have become one of the more interesting venues for theoretical and methodological issues in archaeology in Göteborg. They are both great sources of knowledge concerning social theory in archaeology. However, as I hope this dissertation shows, I am not a microarchaeologist, despite Per and Fredrik's claim that I am...

Justine and Dave helped me with the field work for three seasons, 2003-2005, and introduced me to archaeology in the little known Cochuah region. Both have been very generous with taking time to read and comment various texts. They are highly experienced and excellent archaeologists that will bring clarity to unresolved issues in the Cochuah region. I am grateful for them letting me work in their project and giving me fairly free hands.

Alberto shares my interest in the causeways and we helped each other during field work. Our team worked very smoothly and we managed to map and direct excavations with limited resources. Without Alberto, the sub-project on causeways at Ichmul would not have been able to cover as much ground as we did. Our paths will surely cross in the future. May the force be with you.

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of my texts. He has always been generous with sharing information. Another Mayanist I would like to thank is *Jesper Nielsen* who was my "opponent" when I defended my licentiate thesis. *Karl Lorenzen* invited me to his excavations of Postclassic shrines at Naranjal. That experience made me change geographical focus. *Jennifer Mathews* has been generous in discussing causeways with me. *Dominique Rissolo* has given me valuable information on caves in the Yalahau region. I also thank *Linnea Wren* for letting me use her drawings from Yo'okop in this dissertation. I also appreciates the comments from *William Rathje*, who is the only Mayanist/garbologist, apart from myself, who has attended the microarchaeological seminars.

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Finally, this dissertation is dedicated to Dorthe, without whom the last thirteen years would have been very different. From where I am today, I can not see my life without her.

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Entering the roads in-between

1.1. Towards a posthumanist archaeology

Many archaeologists lack confidence in their empirical data. It is quite common among some Mayanists to believe that epigraphy, iconography, ethnohistory and ethnography can tell us more about the past than pure archaeology. This tells us much about how the gaps in our knowledge are filled with information coming from other sources. It is assumed that this reinforcement can be done without problems by relying on the generalized concepts of culture, society and even the human being itself. To provoke the reader, I claim that *the concept of the human is a problem in our attempt to understand the past*. The aim of this dissertation is to investigate the archaeological record by first decentralizing the human being since we otherwise are tempted to use these other sources. In the archaeological record there is immanent information that we cannot reach by using epigraphy, iconography, ethnohistory and ethnography. This is not an attempt to isolate archaeology from those other disciplines as Laviolette (2006:254) believes my aim is. The attempt is rather to re-evaluate materiality from a non-human perspective in order to later set it in relation to those other sources.

Therefore, archaeology has not investigated all its potentials since the discipline uses approaches that partly set limits. These other potentials do not lie in the transcendent *quasi-objects* archaeologists usually attribute materialities with. There is no practice, gender identity, ethnicity, cosmology, political organization, social structure, world system or cognitive scheme in the archaeological objects. The archaeological focus on such anthropological or sociological quasi-objects forces archaeology into a field of more or less qualified guesses. Our main obstacles here are the *anthropocentric* and transcendent approach and our own intellect. We are incapable of understanding the changing world and that human beings are not the centre of everything.

The main reason for this is that many archaeologists live by the motto that archaeology is anthropology or it is nothing at all. This idea is indeed common among archaeologists (Nichols, et al. 2003). The motto seems to be difficult to remove as it is firmly fixed in anthropocentric social science and philosophy. Thus, archaeologists seek to explain the same thing as anthropologists do, albeit with material remains. Anthropocentrism relies on a world view that is dualistic, *arbolic* (tree like) and hierarchical. Humans are separated from everything else. The human being or its culture is placed in the centre and becomes the initial and ultimate goal for research. Our incapability of understanding the new and unknown has to do with the fact that we always look for the unknown in the known (Pearson 1999:97-98). In the archaeological case, the known is the human being, the culture and the social. The norm is that of the human being and that of human origin. Therefore, archaeologists ranging from processualists to postcolonialists, as well as from a focus on world systems to subjectivity, base their understanding of the past in something not present in the present data. However, the danger here is to fall back on "postmodern" hyper relativism and question everything and claim that there is nothing whatsoever upon which to build an archaeological knowledge.

Archaeology is a discipline, a power that assumes a privilege to interpret ancient artefacts and

ruins. Some archaeologists believe this is wrong and they argue for a relativism of thought. In the relativist order there is no privileged position for archaeologists to interpret the past since there are other versions of the past. Proponents of such a view believe in social constructions and social essentialism. If we follow this view, we may open up the path for far more suspect interpretations, such as intelligent design, local myths and New-age. This is not to be desired since relativism also questions the relevance of philosophical and scientific matters in archaeology. Maybe we can find a road *in-between* the extremes of relativism and positivism. I hope this thesis will show that philosophical ideas are important for an empirical archaeology.

The highly variable ideas labelled "postmodern" are often problematic, particularly their uses in archaeology. The main problem for this thesis is that the human subject is put in the forefront of interpretation. Despite the phenomenological and psychoanalytical critique of Cartesian dualism of rationalism, there has remained a belief in an absolute truth in the human subject. This was thrown down by "postmodernism" where all ontologically "secure" categories were questioned (Braidotti 1991). Foucault replaced the subject with subjectifying practices and Derrida replaced presence with difference. However, what still remains in most "postmodernism" is an anthropocentric and social constructionist perspective. Everything is measured from the view point of the human being or its culture.

I have labelled this form of anthropocentrism as *humanocentrism* and filled it with some additional meaning. Humanocentrism remains the main approach in archaeology whether one believes in rational and ontologically secure categories or if one believes in social constructionism. The ultimate aim of this thesis is to suggest a change of the humanocentric relationships in the archaeological record, and help us to see materiality as *polyagents* to use my terminology, or as *actualizations* of a *virtuality* to use the terminology developed by the French philosophers Henri Bergson (1859-1941) and Gilles Deleuze (1925-1995). To begin with a very simplistic explanation; a polyagent is anything with a physical existence that interacts with the world. In the *polyagentive* approach, humans are only one category of polyagents, constrained or successful due to the material environment.

Mayanist studies beyond culture

The empirical examples of polyagents used in this thesis shall be the causeways at Ichmul and Yo'okop, two large sites in the Cochuah region in the Mexican states of Yucatan and Quintana Roo. This is within the Maya area, an area dominated by American culture-history. Thus, most Mayanist studies are far from "postmodern" thought and like a ghost from the past, *culture* hovers above most Mayanist research and frames interpretation.

Anthropologists study "culture" but there are more than a hundred different definitions of what culture is (Keesing 1981). Therefore, it is interesting to see that some archaeologists wish to fix archaeology as anthropology since they both study "human culture" (Gillespie and Nichols 2003). This trend runs the opposite way of what some anthropologists try to do, to abandon culture as a concept (Barth 2002). I shall not use the concept of "Maya culture" for reasons that are explained later. The word Maya will only be used in association with a geographic area; the physicogeographic area of the Yucatan peninsula. Although most of my examples come from what others call the Maya "cultural" area, it does not mean that I see it as a "cultural" area.

The main problem in Mayanist studies is that grand theories are being used that see the Maya area as a culture on a scale far beyond the hieroglyphic inscriptions, excavation units or settlement surveys Mayanists work with. These models are rarely based on the artefacts themselves, artefacts are only used to support a static and spatialized model. The models in themselves are only high level abstractions, not originally based in the physical objects because the models try to explain the culture, social structure or practices behind artefacts – and these are just quasi-objects abstracted from anthropology or other social sciences.

Some of the problems I have encountered in my reading of Mayanist research are: (1) The generalized view of the concept of culture, such as the "Maya" or "Mesoamerican" cultures; (2) Researchers continue to lump data together that traditionally have been associated with each other without questioning their connections. This contributes to the growing devaluation of essentialist concepts such as "ideology," "Maya" or "social evolution," to name but a few; (3) Grand transcendental models are used to explain most aspects of a social formation in an area and in a temporal sequence defined by modern researchers; (4) Materiality is seldom discussed and critically evaluated from a perspective beyond culture-history or simplistic symbolism.

The list can be made much longer, but it is not my intention to criticize the theories and methods of others here since it would be too generalizing in itself, neglecting the variability that I am seeking for myself. Further, I believe the past includes an unpredictable network of usually incommensurable factors, since our subjective evaluations and categories change in time and in different contexts. This has to do with our language and intellect which are not able to describe the things in themselves but which rely on representations. Therefore, a social constructionist would argue that all we say is an interpretation of a discourse. In the contemporary postcolonial critique, it is fairly easy to deconstruct a general power relationship in archaeology. One can take a postcolonial theorist, such as Bhabha (2004), and use him everywhere in the world (despite the fact that the users often wish to focus on local variability). Although postcolonialism is important in its focus on stereotypes and the power relationships inherent in our concepts, it is just as essentialist as the approaches it seeks to deconstruct. Social essentialism will not take us far. It creates its own will to power and subordinates other interpretations.

Will archaeology ever abandon the fuzzy concept of culture? Probably not since the discipline relies too much on non-empirical data (humanocentrism). By humanocentrism is not meant that we should not study the human being. On the contrary, the human being is still one of the targets for the polyagentive agenda, but she becomes decentralized in relation to materialities. The human being is not the driving force on earth. My proposal in this thesis is to go back to the materiality, decentralize the human being, and remove invisible externalities (quasi-objects) not available in the materiality, such as culture or practice. The thesis attempts to go beyond the constrains of social constructionism (Hacking 1999) and develop a theoretical base in realism (DeLanda 2002); back to where we might have been had not postprocessualism lost its "postmodern" luggage at the airport of culture and instead headed for a hermeneutic destination. Hopefully I can bring this luggage closer to a *posthuman* destination where the real is positive, full, without negation, dynamic and open-ended.

A way to use both "constructionist" and "materialist" approaches is what could be needed. That would be one way. However, that is not the road I intend to follow in this text. This thesis will take a different view of the materiality found in the Maya area than Mayanists by tradition have focused on. I intend not to merge idealist and materialist approaches, I will follow the *roads in-between*, within an ontology of temporal movement and *immanence* (existing or remaining within). Along this path my inspiration primarily comes from the philosophers Bergson (1998, 2000, 2004), Deleuze (1991, 1994; Deleuze and Guattari 1988), Grosz (1999a, 2001, 2004), DeLanda (1999, 2002), Pearson (1999, 2002), Nietzsche (1968), Bachelard (2000a), Sartre (1991), Derrida (Hägglund 2002), Foucault (1972) and Wittgenstein (1998), the sociologists Latour (1993, 1999, 2003), Pickering (1995, 2003), Giddens (1979, 1984) and Turner (1994) and the social anthropologists Aijmer (2001) and Gell (1998). There is an extended use of concepts not used by Mayanists or other archaeologists in this thesis. To help the reader, I have attached a polyagentive glossary in Section 7.

1.2. The basics in polyagentive archaeology

I feel a need to briefly give the basics in *polyagentive archaeology* since I will first discuss "traditional" Maya research before we enter the polyagentive path. Not until later shall I penetrate into the Bergsonian and Deleuzian ideas of virtuality and actuality. Therefore, this thesis will look like two different theses. Section 2 and 4 describe fairly traditional Mayanist research. The other sections will depart from the sources outlined below.

Polyagentive archaeology proceeds from the idea that the real challenge for archaeology is to construct a theory where the material remains are in focus and not the human beings which are the focus of approaches lumped together such as "culture-history", "processualism" or "postprocessualism". Here I am partly following Fahlander and Oestigaard's (2004:5) belief that archaeology is entering a third formative phase; the study of the social dimensions of materialities. Let it be known right here, in order to reduce confusion, polyagentive archaeology seeks human and social patterns but these are initially reduced in order to find what is continuous and persistent in the archaeological record. This continuous and persistent is not the human being.

In some contemporary social theory there has been an emphasis on the relationship between humans and non-humans, especially in the field of *technoscience* (Haraway 1995, 2003; Ihde 2003; Latour 2000, 2002, 2003; Law 1999; Pickering 1995, 2003). These researchers are united in a belief in an active material world. However, the only way in which we can represent this active and changing world is through static entities and solids, such as words, pictures, numbers and matter (Bergson 1998, 2000, 2004). For this reason, some technoscientists wish to abandon the representational idiom (Fris Jørgenssen 2003:213). This is also a central issue in the polyagentive approach. One way to break away from hyper-representationalism is to loosen up the entities, make them interpenetrate, and not see them as isolated from each other. However, we still need to write and illustrate our ideas, and we can never escape the representationalist chains. Instead, the focus shall be on how polyagents interact without any particular entity taking the central role. No entity can have an absolute boundary in space and time.

In this endeavour I shall ally myself with *posthumanism*, since my aim is to decentralize, in some instances even end, the importance of human beings in archaeology. However, Massumi (1996:232) has pointed out the danger in trying to exclude the human being in social studies. Such attempts have often made anything human the measure of everything and therefore they can generate anthropomorphism. If the relation between the human and the non-human is just a social construction, then this distinction is useless. I do believe that this relation is more than a social construction, particularly since social constructionism sees the becomings of materiality only as the result of human activities and imagination, something Deleuze calls *hylomorphism* (Pearson 1999:214). Therefore, my approach aims to go beyond constructionism (Hacking 1999), representationalism and hylomorphism (Deleuze and Guattari 1988), in order to find the basis elsewhere.

A polyagentive evolution

Evolution will be reappraised in this thesis, but from a perspective different from that of neo-Darwinism (Dawkins 1989; Dennett 1996) and neo-Darwinian archaeology (O'Brien and Lyman 2000; Shennan 2002).

Human beings have always had intimate relationships with materiality and technology. This means that we have never been human beings in the strict biological sense according to J. Pickering (1997). There has never been a pre-given, biologically definable human condition that can be distinguished from technologised posthuman conditions. We are not "natural beings" in the sense that we have only evolved from biology; we are bound in the technological and material world. Human memory is always affected by technology. Technology is the *prosthetic already-there*. There is

no human devoid of technology or materiality (Barnet 2004).

Ingold (1996) has criticized the distinction between biology and technology, since human beings develop their activity together with the associated materiality. It has been argued that the human evolution accelerated in the late Pliocene by the development of a semiotic system to transmit tool technology. This also had genetic effects and formed situations where both genetic and extra genetic vehicles for inheritance mixed (Kingdon 1993). Thus, human social formations have been formed by the doings of previous human beings, to a far greater extent than other living beings have. Therefore, J. Pickering (1997) argues that what makes human beings different from other beings does not only come from our own biology but also from our own created environment.

However, all other living beings have evolved in relation to matter as well. For example, otters use stones to open up molluscs. Beavers construct huts and dams and thus engineer the landscape in which they live. Constructions made by ants and termites also have impact on the local landscape. Human beings are mainly unique in terms of scale. The creative evolution of Bergson is here of great importance. The word creative does not relate to creationism or intelligent design, but relates to the creative power of evolution. Bergson makes a distinction between intelligence and instinct as two tendencies and how these generate different forms of consciousness and how intelligence actually inhibits the understanding of the changing world (Bergson 1998). All animals have a mixture of intelligence and instinct to various degrees, and these forms of consciousness relate to matter in different ways.

In my view, the concept of evolution has been used in problematic ways in social sciences, often focusing on macro-scale patterns. Giddens argues that evolutionism "can easily be an enemy of history rather than the ally it might superficially seem to be. For it encourages a high-handed disrespect for matters of historical detail by cramming human history into pre-packed schemes" (Giddens 1984:360). However, what Giddens does not acknowledge, is that there are evolutionary ideas that do not use these teleological views and pre-packed "schemes" (*orthogenetic* evolution), no matter if they are cultural stages, genes or memes.

An example of the problematic use of social evolution can be found in a recent article by Adams and others (2004:336), in which they study social changes in the Three Rivers region of northwest Belize and northeast Peten, Guatemala. They argue that since *ontogeny* (the individual embryonic development) mimics *phylogeny* (the evolution of species), this can be applied in social science as well. They suggest that the Three Rivers region recapitulates what happened all over the Maya area, as if the region was a biological entity and the Maya area a species. This is when evolutionary ideas are taken to their extremes and externalized from their original context. Ontogenetic processes go through certain stages. From such a perspective it is similar to *orthogenetic* explanations of "cultural evolution" which imply that it is the same culture that goes through different predefined stages (band, tribe, chiefdom and state). Orthogenetic ideas should not be confused with Darwin's descent with modification (Lyman and O'Brien 2001). Giddens and most agency theorists generally confuse these views of evolution.

The leading neo-Darwinists in archaeology today should not be associated with the past social or cultural evolutionary ideas developed by Spencer, Tylor, Morgan and Marx where orthogenetic views of social formations occurred. For example, Shennan's (2002) ideas go partly back to Darwin, but mainly to Dawkins (1989) and his genes and memes. Neo-Darwinists see culture as behavioural phenomena and that artefacts are part of the human *phenotype* that is affected by natural selection (O'Brien and Lyman 2000; Shennan 2002). Kristiansen (2004) set this neo-Darwinian trend as an opposite to agency-theories that are entrenched in social constructionism. As mentioned, social constructionist and postcolonial approaches tend to reject evolutionary ideas, basically based upon earlier, nineteenth and early twentieth century orthogenetic uses in anthropology and archaeology. Orthogenetic views were also popular among the processualists (Lyman and O'Brien 2001). On the

other side, social constructionists sometime have a very narrow view of evolution; that there is only one way to think of evolution (which is entrapped in determinism), and that only the social world is open-ended and allows for variability. However, by not acknowledging evolutionary processes, the constructionist approaches become static since there is an essential human being at any place and at any time. They must therefore argue that changes cannot come from within, but from without. This is a transcendent, hylomorphic and humanocentric view.

What most agency-oriented researchers refuse to see is Darwin's greatest contribution. The "feminist" philosopher Grosz points out, in her reading of Darwin, that he transformed *Being* (the static and eternal) to *Becoming* (the changing); to divergence, more complexity and variation. Darwin's world is endless variation and openness to the unexpected. It is not that of biological determinism or stages, which are other evolutionary ideas. Darwin saw the past as the mould for the present species but the past does not limit them. He introduced the idea of the event, the rupture that generates the unpredictable. Grosz does not see the past as the cause for the present or the future, but rather the basis for divergence and difference (Grosz 2004:7-8). It is these particular points of Darwin that shall be followed in this thesis.

Thus, there are other ways of viewing evolution that do not run up in the dichotomy between agents and genes that Kristiansen (2004:77) has formulated. These are lines developed by some of Darwin's philosophical followers; Nietzsche and Bergson (Grosz 2004). A mixture of these philosophers ideas are found in Deleuze's and Guattari's (1988) writings where they wish to move towards *rhizomatic* or *machinic* models of evolution instead of the predominant *genealogical/arbolic* and *filiative* models. They emphasize an ethology of assemblages rather than one of behaviour. In contrast to Darwin and the neo-Darwinists, Bergson and Deleuze do not give primacy to the gene, the germ cell, the organism, the species or the memes. They focus on the becoming of duration and intensive processes that lack a specific spatial location (Pearson 1999:145). Therefore, evolution is not just hereditary transmission and reproduction as suggested by Dawkins (1989) and his selfish genes.

Based upon Deleuzian ideas, Pearson (1999) argues for a reconfigured ethology where bodies become the vehicle for instincts which are particular territories of becoming and of identities that emerge through differentiation, divergence and creation. Behaviour is no longer localized in individuals as a form of a Cartesian *homunculi*. It is seen as a result of complex material networks which cut across individuals and which transverse boundaries of organisms or objects (rhizomes). A rhizome consists of *plateaus* or *multiplicities* that are connected to other multiplicities that form or extend a rhizome. A multiplicity is a unity that is multiple in itself. The rhizome is different from the tree metaphor (*arborescent* thinking and structure) since a rhizome connects any multiplicity with any other multiplicity. It has no centre and it is non-hierarchical and non-signifying. It does not consist of units, but of movement. There is no beginning or end; there is just a middle, an *in-between*. Whereas the tree logic emphasizes tracing in a direct line and reproduction, a rhizome is a map with multiple entryways (Deleuze and Guattari 1988).

The world is a changing field of multiplicities or in another word; assemblages of heterogeneous components (human, animal, molecular, materiality) in which the creative evolution involve blocks of becoming (Pearson 1999:171). The reason why we have problems in understanding such a changing world is found in Bergson's writings. He argues that our mind has evolved to seek a lowest common denominator, a spatial location from where we can begin our understanding of the world. When we create a model of becoming we tend to freeze the process to a static frame and shape it into a being. We freeze duration to instants so we can analyze it. This is how science has created its categories and the way in which human beings gain knowledge (Bergson 1998). Our acts exert on fixed points in space where duration gets broken down to instants that relate to our positions (a *discrete* or an *actual multiplicity*). These instants are only snapshots that our mind has extracted from the continuity of duration (the *continuous* or *virtual multiplicity*). From this, the mind forms artificially

closed systems (Pearson 2000:150). Our mind cannot understand the duration of the world since it uses these static frames as points of reference. We cannot understand what is fluid because we think to act, and to do that we need to calculate and foresee, something we do from fixed points and units. Therefore, we tend to forget that we have created the categories or representations we use. In reality, there is no fixed point or representation, only a continuous "stream" of duration (Beronius 1991:38). It is from these representations we "construct" our world view. In short, there is no fixed and ready society, and reality should be seen as a process rather than as a static being.

Although Bergson is my main influence in this thesis, his ideas need to be elaborated upon since he emphasizes the organic world and the consciousness. Bergson has by some been called a vitalist philosopher, particularly since he uses the idea of *élan vital*, the vital impetus, which drives the evolution (Bergson 1998). However, vitalism attributes to life a force that distinguishes it from the inorganic. It is usually opposed to mechanism, the idea that things are made up of external and mechanical atomic elements. Vitalism argues that the organism is greater than all its parts taken together (Grosz 1999b:22).

Bergson's philosophy does not give matter the openness it gives to life. However, we cannot always draw a distinct line between life and non-life. The distinction between human agents and other life forms gets complicated when we try to draw the artificial boundaries between them. This means that agency has an evolutionary component that agency theorists do not confront by relying on social essentialism. Where shall we draw a line for something to be called an agent if we by agency mean the capability to affect the environment since even animals can be seen as transcendental subjectivities (San Martin and Peñaranda 2001)? It is easy to draw a line for agency if we compare a human being and a stone. However, if we follow the "chain of life" in pre-Darwinian thought (McDonald Pavelka 2002), which still is connected to evolutionism, and compare chimpanzees with us; chimpanzees with dogs; dogs with lizards; fish, insects, trees, unicellular beings, etc., where do we find this boundary? Viruses are halfway between the organic and the inorganic. From such a perspective, it is not easy to say when "agency" appeared. Thus, there can never be a clear line between a supposed material inertia and the living that becomes. The material also becomes and it is this process that it shares with the living. It is information "bound up with a particular mode or organization of matter, that becomes, that expands itself as it is impelled to the future" (Grosz 1999:23). The use of Deleuze, Guattari, Grosz, DeLanda, Latour, Pickering, and Gell will help to bring Bergson's insights into the material environment.

We must remove the genetic concepts while we study a *polyagentive evolution*. Technical objects are more retroactive compared to biology. An evolution of technical objects does not work along a V-shaped vertical, arbolic, branch where there is increased diversity. It is rather a flat horizontal, rhizomatic, line from which multiple technical objects emerge and changes occur spontaneously. Outdated objects can reappear within new designs as if they only needed some additional invention in order to evolve again (*retroactivity*). These objects borrow from other technological lineages. This cannot occur in biological evolution, a dead branch can never reappear. *Indexical polyagents* (materiality manufactured and used by human beings that leaves a trace, an index) can therefore operate on the past. There is a technical remembering where transfer and storage occurs (Barnet 2004).

Barnet (2004) argues that it is our inevitable death that strive us to create archives or objects that leave a trace of ourselves for others to remember. These objects or inscriptions are beyond ourselves and remain after our deaths. Stiegler (1998) suggests that this is a structure of inheritance and transmission that exists beyond the genome. It is believed to carry a collective and transcendent wisdom, or "culture" which is seen as a series of memorials. I partly agree, but I will focus on the immanent.

The polyagentive approach primarily differs from the humanocentric archaeology in that it tries to decentralize the human, to give an account of active tangible archaeological materialities

and *intangibilities* (anything that can be perceived but which is not solid or palpable). This approach also aims to initially de-culturalize and de-socialize the past by emphasizing what lasts, differentiates and repeats. This is not found in the static actualizations, it is found in the virtual. To put it short, polyagentive archaeology works from the understanding of two realities of the world; the *virtual* and the *actual*. These realities are pinpointed below and will be explained and explored at greater length in Section 3:

The virtual

(V1) The non-empirical and immanent level of polyagentive archaeology is the level of *virtual (qualitative) multiplicities* (Bergson 1998, 2000, 2004; Deleuze 1991a, 1994). The virtual is a nonnumeric duration which is impossible to split up. It is pure quality. The virtual is the past that is simultaneous with the present, which it actualizes through becomings. It is always turning into something else by differentiating and repeating. This virtual multiplicity becomes *actual (quantitative) multiplicities* that make up the analytical and spatialized world. It is the latter we find as *polyagents*, which are actualized objects with "causative capabilities" in an actualized polyagentive network.

(V2) *Polyagency* is a collection of *intensive* processes that lie *in-between* the virtual and the actual. It is a distributed agency that lacks an identity of its own, but it generates other identities through the becoming, both externally and internally (Grosz 2001). It is rhizomatic, meaning that there is no genealogy here, no straight line in the polyagentive process. It is in the in-between where *individuation* takes place, where virtuality closes onto itself and forms an actualized boundary to what is external.

(V3) Both polyagency and virtuality lack metric spatiality (space seen in Euclidean terms) and actualized/spatialized temporality (when time is seen as sharing the characteristics of space). However, they generate polyagents that have spatiality (Grosz 2001). With polyagentive archaeology it is possible to use both "long-term" and instantaneous perspectives of the same data. The virtual that persists in a "long-term" perspective is actualized through events that come down to us as material patterns.

(V4) The virtual is the ontological foundation for a complex *ontology of ontologies* (Aijmer 2001; Wittgenstein 1998). No ontology can be said to be truer than any other. However, the virtual can be found in all ontologies, but it does not explain how their actualizations are perceived by human beings which can be reached by other ontological perspectives. This "virtual ontology of actual ontologies" focuses on temporal movement rather than on substance and representation.

The actual

(A1) The empirical level of the concept is the level of actual multiplicities; in another word – the polyagents that are divided into materialities and intangibilities. From a physical sense, these consist of a union of *singularities*. A singularity is an intensity where something specific is concentrated and differentiated. Materiality consists of singularities that changes human behaviour, such as when liquid water turns into ice. A frozen lake can be used differently than a non-frozen lake. This is what separates materiality from "material culture", materiality is not just artefacts or buildings. Polyagents are what we can account for, but they are static representations of the becoming. Originally, polyagency only meant "causative capabilities" of polyagents (Normark 2004a). This notion is still maintained, but only in the actualized level. The word agency in the concept excludes intentions, will or mind. It mainly relates to that which is active and not static.

(A2) Polyagents share similarities with Latour's (1999) *actants*. However, the focus is on the material polyagents, but intangible ones can sometimes be studied. These interact with each other and the way these actualizations intersect with each other is also polyagency because the encounter generates becomings. Since the encounter also diverges tendencies within the virtual, this rhizomatic interaction between actualized objects form a discontinuous "genealogy" that has to be recreated

and constructed from a human perspective (Bachelard 2000a; Foucault 1979).

(A3) The *polyagentive ("machinic") assemblage* consists of several polyagents that together form a unity. The *polyagentive ("machinic") phylum* is a polyagentive lineage that is a constellation of singularities (Deleuze and Guattari 1988). Any polyagent that is part of a polyagentive lineage can develop into other phyla. The phyla and assemblages cut through each other through the virtual processes and therefore they do not represent static entities. DeLanda (2002) places the machinic phylum in the virtual since it is formed through virtual processes. I place the polyagentive assemblage and phylum in the actual since it can only be defined by materialities.

(A4) The actual is the level of representations (language, signs and materiality/territory). Here a semiotics with no meaning is used. The sign/representation/materiality is only seen as an *index* or *prototype* of polyagents. This *indexical polyagent* only needs the human agent to become reproduced (Gell 1998). The idea of the distributed indexical polyagent is used to explain how a polyagentive phylum is reproduced. A collection of various distributed indexical polyagents forms a *polyagentive œuvre* that is unique for every locale or site. An œuvre is the total amount of indexical polyagents at a site or locale at a specific time.

(A5) The indexical polyagents, phyla, assemblages and œuvres are nested together in *polyagentive networks* of various spatio-temporal extents. The network also relates to non-indexical polyagents. It has *nodes* that connect other networks at other spatial locations. The network is temporal and is constantly fluctuating and brings along virtualities from near and far to various nodes of the network. It is up to the researcher to define the nodes of interest. Each node is a polyagent within a phylum, such as causeways.

The return of the human becoming

The points above would characterise a pure polyagentive approach where the human being, the social and the culture are decentralized. However, such an approach would obviously not explain the way in which human beings interact with each others or how they interpret the world. Therefore, although the intentions of past human agents are of secondary concern to this approach, the human agents are introduced at a later stage in the analysis, as reproducers of *virtual ideologies* and *actual ideologies*. The virtual ideology is directed towards matter that affects actual ideologies. Actual ideologies focus on forms and style and therefore create representations such as symbols, architecture and writing. The actual ideology ranges from individual habits and *nomadic* thought to *arbolic* macro-ideologies. The *tendencies* of the virtual ideology are always working, changing and diverging whereas the actual ideologies it intersects with are perceived as static and ontologically secure. This is a way to describe how what appears to be continuity from the Middle Formative to present day (such as the quadripartite principle in "Maya cosmology") mainly is a continuity in the virtual tendencies of materiality, and not in the transcendental actual ideologies Mayanists usually deal with (Normark 2007). The human agents are still part of the archaeological investigation, but they cannot be separated from the "non-human". They are no longer the centre of attention and action (Pickering 1995:6).

The polyagent cannot be fully understood if we do not include manufacturer, user and non-user of the polyagent (Latour 1993). We need a polyagentive network. This polyagentive network is not symmetrical. The symmetry between "material agency" and human agency breaks down when it comes to intentionality. Pickering argues that human beings and machines (and in my view other material objects as well) are intertwined in a tuning process, but that there is no strict symmetry. Human beings have a planning capacity, set up goals and make plans whereas materiality does not. These plans emerge temporally but they transform in the encounters with materiality (Pickering 1995:17-18). Therefore, Pickering disagrees with Latour's idea that there is symmetry between human beings and non-humans. For Latour there is no primacy between different forms of agents before the encounter (Bruun Jensen 2003b:230). Pickering rather suggests a dualism that

is dependent on human intentionality. Human action often has future goals in view (Bruun Jensen 2003a:87). In the polyagentive approach, it is argued that the past human beings indeed would have been of primary importance if we could study them at first hand, but since they are lacking, they need to be decentralized.

How is a polyagent defined in its actual state? Since it derives from the actualization of the virtual, it means that each soil particle in the ground is a polyagent. Although this is true, that is not an operational archaeological unit, unless we are studying soil particles. Polyagency shares with the virtual the lack of a defined temporal and spatial location. What I mean here is that polyagency is a space without a space. It is a relationship that lies *in-between*. If an artefact is broken, its polyagency is not broken. The polyagency has just internally differentiated and relates to two objects or actualizations that each have different tendencies, but that maintain the same original virtuality. It is up to the researcher to define the spatial and temporal extent of a polyagent which is either a material or an intangible object. This has to be defined in each case. The thesis primarily concerns one form of polyagents; causeways found in the Maya area and particularly those at two neighbouring sites. The actual states of a causeway always fluctuate in its contours. The virtual tendencies of the causeway keep it united from the points of view of particular actual ideologies; archaeologists see it as an archaeological structure and road constructors see them as potential construction fill for new roads.

Examples of how indexical polyagents affect the activities of people are numerous in the Maya area; striations on water jars may have cooled the container or may have helped it from not slipping out of the user's hands (Davis-Salazar 2003:283). Small depressions commonly found in the Maya Lowlands could be cool work areas (Weiss-Krejci and Sabbas 2002:349). When the earthwork surrounding Tikal fell into disuse it may have been an advantage to settle near it since rock and *saskab* (powdered limestone) could be mined from it. Water could have been collected at various places and this generated deep moist soils for agriculture (Webster, et al. 2004:32). *Topes* (speed bumps) in the contemporary Yucatec villages have become places for commerce since vehicles need to slow down and this opens up opportunities to sell and buy (Burns 1992:44). These are all examples of how materialities affected and still affect people's actions. However, the ways we view them are as actualized multiplicities of a virtuality. As such they can have a multitude of humanocentric explanations (actual ideologies) which are developed in contact with a virtual ideology that is immanent to materiality.

Cautions and problems to be noted

I will return to the human agent once I have laid the foundation for what unites the human being with the non-human which is beyond the constructionist straitjacket, and that is the virtual. A return to the human is needed, since otherwise my approach may be target for the same critique as the one Merleau-Ponty (1964:97) launched against Bergson. He was accused for developing a philosophy of immanence which describes the world in general terms, such as duration. It is sometimes argued that Bergson "lacks a 'picture of human history' that might provide its institutions with some content" (Pearson 1999:223).

The problem with using Deleuze is that he uses different names for similar concepts. For example, according to DeLanda (2002:158), the terms plane of immanence, plane of consistency, body without organs and machinic phylum mean more or less the same, but there actually are differences depending on their contexts. This is in line with his own philosophy where there should not be any essential concepts.

My task is not to generate a new history, a new meta-narrative of materiality or causeways since there is a distinction between becoming and history. Becoming is experimentation of what lies outside humanocentric history (Pearson 1999:202). Causeways as actualized nodes of becomings shall form a constructed and discontinuous "genealogy" for local changes rather than explaining

the history of Ichmul and Yo'okop and the roles of these sites in the Northern Maya Lowlands.

There are epistemological problems with a focus on becomings, of the changing character of the world, since epistemology relies on a belief that it is possible to describe clear cut criteria and that there is trustworthy justification of true knowledge that always is true. The main problem in developing an epistemology of becoming is to deal with the dynamism of reality and the fact that all knowledge is partial and temporal (Martín Alcoff 1999:55-57). We always use knowledge that is believed to be atemporal while we are studying the becoming. Thus, becoming is obscured by our methods (Pickering 2003:102). The quest here could be to investigate the various forms there are of knowledge (Martín Alcoff 1999:75), what I call actual ideologies. Here, Wittgenstein (1998) and Aijmer (2001) will be useful in order to use the ontologies within the ontology of ontologies. As Aijmer argues, there are different ontologies of the world that can be merged within an ontology that allows for this. Aijmer's foundation is the human being, but I choose an ontology of virtuality (which is a realist ontology) as the basis for the other ontologies, which are the discursive and iconic ontologies. These belong to the actual.

There is an extended use of "new" concepts in this thesis. I use this vocabulary (polyagency, indexical polyagent, polyagentive phylum, humanocentrism, event horizon, etc.) to define areas of archaeological research not investigated. However, Derrida wonders whether we should use neologism when we convey new views. He comes to the conclusion that it is metaphysically unfounded for scientists to use new words to explain new ideas since these will always confront pre-existing meanings and words that set cognitive limits (Selinger 2003:156). I agree, but I argue that new constructed words are needed to be able to break away from "culture-history", "processualism" and "postprocessualism". Concepts such as "material culture", "carrying capacity" and "subjectivity" are too entwined with earlier archaeological discourse and they play no role in polyagentive archaeology. Although the terminology that I use is constructed, it emphasizes something that is not socially constructed, like lineage, gender, etc. Such social constructions can only be added to a study if there is an absolute correlation. Ultimately, the concepts should be created from empirical data. The terminologies that I develop are tools that I will use to define archaeological categories based on empirical data (such as triadic causeways and aligned causeways), but these have no predefined social essence. To paraphrase one of Deleuze and Guattari's (1991:5) quotes from Nietzsche: "[archaeologists] must no longer accept concepts as a gift, nor merely purify or polish them, but first make and create them, present them and make them convincing."

It is important not to fall into fetishism of a concept, such as polyagency. We must transcend every concept since these should not become identical with the world, which is idealism (Pearson 1999:205). Therefore, polyagency should not be seen as identical with the real. Latour argues that his own vocabulary has no meaning since he never gives it explanatory weight. For example, he does not think that the world consists of agencies or entities. These words are tools to navigate between different sites (Crease, et al. 2003:18). In this way polyagency and polyagents should be seen. They are mere tools to illustrate other aspects of archaeological data that usually are overlooked.

Although I shall focus on the "micro-scale", even this level needs to be analyzed from "universal" concepts, such as the virtual, the actual and polyagency. We can never do without them, but these universal concepts need to be grounded in the virtual, not in its present actualizations or external quasi-objects as is often the case. The only universals of interest here are those that become, and not those that do not change.

1.3. Objectives

The main objective of this thesis is to outline a theoretical approach that sets the materialities in the centre, and not human beings, societies, cultures, economies, etc. It aims to move away from such humanocentric approaches. The purpose is to analyze the relationship between different forms

of polyagency. By this is meant the way in which the virtual (duration) through its actualizations generates different forms of polyagents, such as materiality and intangibilities. Actualization is the becoming of the virtual. Our mind and other processes create, from a changing world (the virtual), static models or solids of the same world (the actual). Materialities are seen as static, although they are also part of the virtual, the changing, the becoming. These static entities generate and affect each other in polyagentive networks and polyagentive assemblages. This approach is labelled polyagentive archaeology and refers to the abolishment of the human/non-human dichotomy, which is a posthumanist agenda.

For the polyagentive approach it is that which lies in-between the virtual and the actual (polyagency) that is the foundation for archaeological studies, rather than the application of human agency, practice, or social structure on top of or before the materiality. Since the virtual cannot be reached and the actual reflects static entities, the only road that touches the immanent lies in-between. The importance of this theoretical discussion is that it attempts to break up structures and see how structures or entities emerge in processes through time rather then seeing them as ever present waiting to be realized.

The method I use is to merge different theoretical standpoints into a new "synthesis" which is to be applied to results from six seasons of fieldwork in the Cochuah region, Mexico. These investigations have partly focused upon settlement surrounding causeways (*sacbeob* – "white roads"). This took place at and around Ichmul and Yo'okop.

This dissertation thesis shall;

- Criticize the current use of humanocentric archaeology that dominates the discipline.
- Seek a basis from which all archaeological research on materialities can begin.
- Suggest a focus on polyagency rather than a focus on human agency or macro-level structures.
- Investigate the connection between temporally and spatially distributed polyagents.

It will also focus on the following specified issues in and around the sites of Ichmul and Yo'okop;

- How causeways affected and still affect the layout of settlement.
- The way in which causeways reproduce or change social interaction, virtual- and actual ideologies among various polyagents.
- How causeways become crucial nodes of polyagentive networks, and particularly the triadic causeways of Ichmul and the beads-on-a-string causeways of Yo'okop.

1.4. Outline of the thesis

Section 2 is a summary of earlier causeway studies. This is dealt with thematically, rather than chronologically. The main focus is upon socio-political organization and cosmology. In order for the reader to understand the context of these interpretations, there is also a description of what has been dealt with in socio-political and cosmological studies apart from that which directly relates to causeways. There is also a description of the various materialities that causeways are related to, particularly those that are found at Ichmul and Yo'okop.

Section 3 begins with a critique of the constructionist stance in agency and practice theories. I argue for the need to change the causal relationships in archaeology and to increase the understanding of what is immanent, continuous and discontinuous in materiality. I investigate the metaphysics of time and highlight the problematic ideas of the *instant* and of *duration*. Since materialist and constructionist approaches rely on static and/or instantaneous views of time

and the world, there is a discussion of the temporal dimensions of social action and their brief existence. This is followed by the description of the Bergsonian and Deleuzian ontologies in which their ideas concerning duration, space, perception, memory, intelligence, instinct and evolution are explained. The focus is later set on the relationship between polyagents. Here it is argued that archaeological materiality can be seen as indexical polyagents. Certain forms of materiality are distributed polyagents of polyagentive œuvres, polyagentive assemblages and polyagentive phyla. After this, the nested polyagentive networks are outlined. Different modes of power are discussed in their relationship to the concepts of virtual ideology and actual ideology.

Section 4 describes the general background to the Cochuah region, its history of research, the CRAS (Cochuah Regional Archaeological Survey) project and the former PAY (Proyecto Arqueológico Yo'okop). The Section emphasizes the fieldwork and data collected at the sites in the Cochuah region. The main description concerns Ichmul, its termini sites (San Cristobal, San Pedro, Xquerol, San Juan and San Andres), Nohcacab and Yo'okop.

Section 5 uses the polyagentive approach developed in Section 3 as a frame to discuss the field data presented in Section 4. It begins by outlining five polyagentive assemblages detected at Ichmul and Yo'okop. It also describes the actualizations related to causeways and includes other data in a local context to show the developments of polyagentive networks.

Section 6 sums up the major theme in the thesis. This Section is followed by a polyagentive glossary.

2

Causeways in Mayanist research

In this Section I shall describe earlier theories and models concerning causeways and particularly their broader theoretical contexts in Mayanist studies.

Researchers have mainly seen causeways as reflecting political boundaries, social and political links (Benavides 1981; Carrasco 1993; Kurjack 1977; Shaw in preparation-a), economic and administrative facilitators (Chase and Chase 2001a; Chase and Chase 2004a; Cobos and Winemiller 2001), ceremonial pathways (Freidel and Sabloff 1984; Ringle 1999; Villa Rojas 1934), cosmograms (Mathews and Garber 2004; Stanton and Freidel 2005), astronomical sight lines (Folan 1991) or a mixture of this (Keller 2001; Shaw in preparation-a). All these approaches reflect attempts to explain human or institutional causes for the presence and use of causeways.

Not only have these models all derived from a macro-level approach, seldom seen from a micro-level approach, but they are also clearly humanocentric. By this is meant that research usually moves away from the materialities we have and that the focus of discussion quickly changes to the invisible and non-present agents, or to the transcendent culture, or to the social structures behind the materialities. The materialities become passive, static and secondary. They are seen as empty, waiting to be filled with external quasi-objects. In this Section there will be a predominant humanocentric perspective since this dominates in Mayanist archaeology.

I shall not put forward answers to why the causeways were constructed. That is beyond what we can know in any greater detail. Neither will there be a conclusion of what the "Maya" causeway meant for the past human agent. Rather, I shall use two neighbouring sites with causeways and work from within the sites and show differences, repetitions and becomings that are the result of actualizations of the virtual. However, we have a long road ahead of us before we get to the roads in-between.

For the non-Mayanist, a basic map of the Maya area (figure 1) and the traditional chronological table (table 1) is given here. A brief chronology of the Cochuah region is given in Section 4.

Periods in the Cochuah region	Time
The Caste War	1847 - 1901
Mexican War of Independence	1810 - 1821
Colonial	1544 - 1821
Postclassic	1100 - 1544
Terminal Classic	800 - 1100
Late Classic	550 - 800
Early Classic	250 - 550
Late Formative	300 B.C. - A.D. 250
Middle Formative	600 - 300 B.C.

Table 1. Chronological table for the Cochuah region.

2.1. Causeways in the Maya area

What is a causeway in the Maya area? The word itself relates to a raised road. However, all causeways are not raised along their whole courses. A causeway also needs to be distinguished from a wide wall and a road. As will become apparent, causeways belong to a varied category of structures.

Brief introduction to causeways

Since the Prehispanic people of the Americas lacked wheeled vehicles or draft animals, demands on

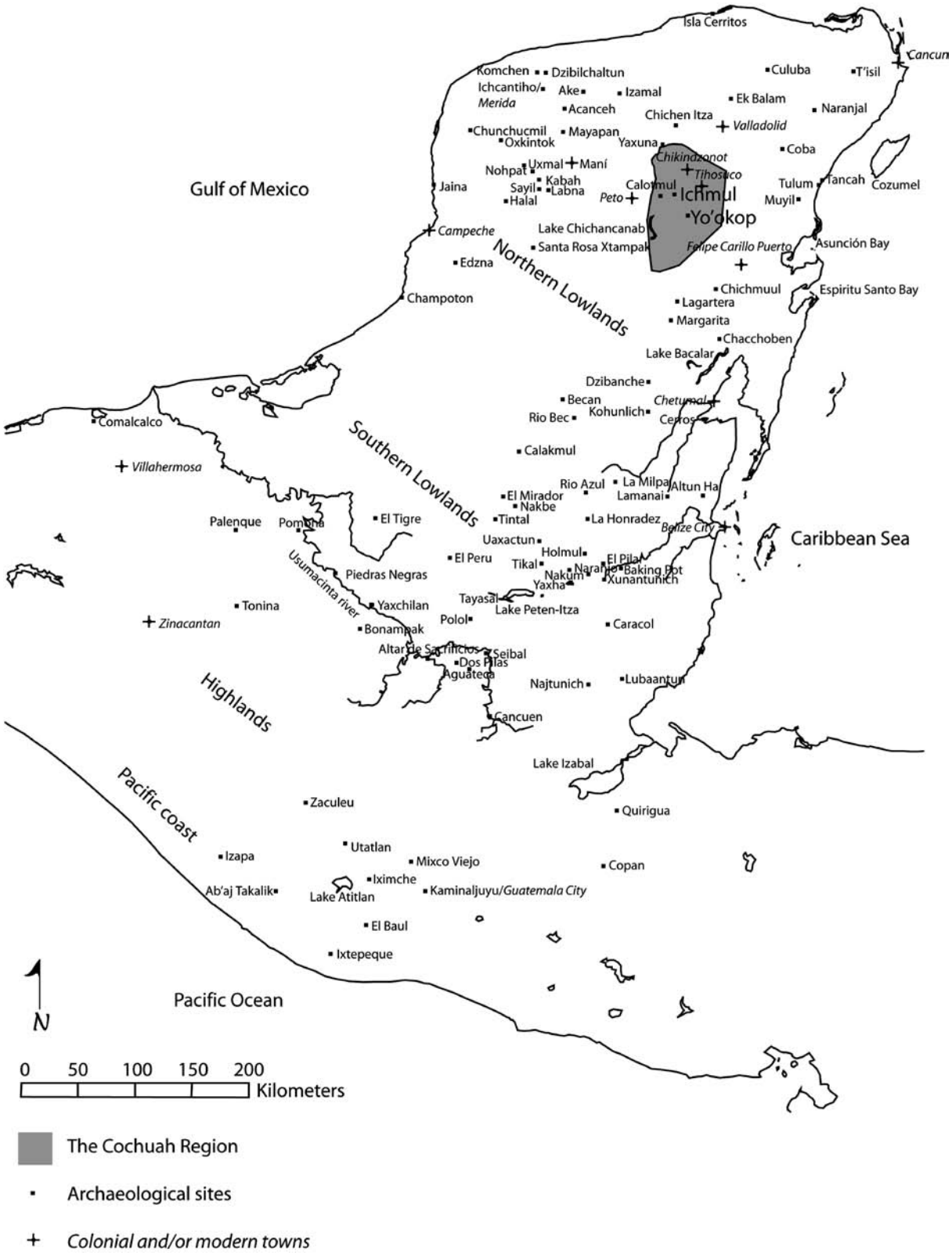


Figure 1. The Maya area.

communication were simple (Hassig 1991:21-22). Therefore, most means of communication went along *informal routes*, such as paths and trails, which had minimal or no labour investment in their construction or maintenance. These routes were the result of necessity and they had an irregular pattern as they avoided natural obstacles (Trombold 1991:3). Trade in the Prehispanic Americas only needed communication routes that were one person wide. To increase the transported volume of goods, it was easier to increase the traffic in the single-file flow on paths. Such past informal trails are difficult to find as they soon disappear in the tropical environment. However, trails have been preserved by volcanic ash in Costa Rica (Sheets and Sever 1991:60).

Formal routes are planned and purposefully constructed. These routes are evidence of labour, engineering and maintenance, which indicates an organization that planned and altered the landscape to facilitate and control the way people moved (Beck 1991:67). Formal routes can be divided into roads and causeways. My interest here is in causeways which have raised road beds (Trombold 1991:3). However, some of the "causeways" are barely above the ground level, though they still have a constructed surface, which the routes in the Maya area generally did not have. Causeways can be further divided into real and mythological routes (Folan 1991:222).

Causeways are found in all types of terrain, climate, geographic area and vegetation (Shaw in preparation-a). They are also known from the late Middle Formative to the Postclassic. Archaeological data suggests that the earliest known causeways in the Maya area were constructed during the late Middle Formative period (600/500 to 300 B.C.) (Kurjack and Garza 1981:301). Some of the early causeways reached considerable proportions. One causeway at Nakbe was 24 meters wide, several meters high and was covered with one meter thick layer of saskab (limestone marl) (Suasnávar 1994). The early causeways at the large Late Formative site of El Mirador also reached considerable lengths. One of them probably went to Calakmul, 38 kilometers to the north (Folan, et al. 1995).

Thus, from early on in the "urbanization" process of the Maya area, causeways were part of both large and small centres. Coba, Chichen Itza, Izamal, Calakmul, Caracol and El Mirador are examples of large sites from various periods that had extensive networks of causeways extending to smaller centres. These sites are believed to have been centres for larger political formations. As it is believed that causeways joined different groups, or played a considerable role in cosmograms, it should be noted that many sites lack causeways. Causeways are also absent or there are only a few, at some large sites. Tikal, considered to be one of the most powerful sites in the 8th century A.D., lacks any known extensive road network, apart from the one within the site centre (Harrison 1999).

Shaw (2001g:267) asks one of the critical questions concerning many Mayanists: "why are some sites able to dominate, manage, and/or coerce their populations without causeways, and why do others make such extensive use of these expensive, but effective, links?". I believe that the key to this question is that the causeways should be seen as a serial phenomenon of various actualizations which cannot all be summarized into one explanation since they all differed at particular locales (Normark 2004c). It is not proven that causeways were used to dominate people, but it is likely that social formations with elaborate and formal road systems were less responsive to change than those without them (Hassig 1991:25). Thus, roads affected the way people behaved, as their presence directed and removed people. Later constructions tended to follow established material patterns rather than cosmological patterns, although some adjustments of site layout may have taken place based upon memories of an old layout (Stanton and Freidel 2005). In some ways the causeways could be seen as externalised memories. Olivier treats roads as memories. He argues that moments in time can be connected although they are temporally "distant" from each other and that the memory of the past is masked since it adopts the form of the present. As an example he uses the Roman *decumanus* (main road) that survives as a memory of ancient urbanity in Paris in the form of the boulevard (Olivier 2004:212).

People living at sites without causeways did not have the same issues as those with causeways. Therefore, I believe that there can only be site-specific answers to Shaw's question. However, even though Mayanists often choose single sites for research, they also tend to seek the "Big Picture" to fit their site into something greater. Hence the blurry concept of "Maya culture" sneaks in and flattens out every Other to the Same. No such blueprint model shall be used by me.

Orthography

I will use the word causeway rather than the various emic terms for road that did and do exist in the Maya area. The most commonly used term in Mayanist literature is the contemporary Yucatec word *sakbe* (*sacbe, sakbeh, zac be*), which is translated as "white road". This word consists of two parts: *sak* (white, clean, neat, fiction and artificial) and *be* (road, street, path, trail, course, route, transit, destiny and employment) (Barrera 1941:76; Keller 2001; Romero 2000:13, 93).

Since the people in Prehispanic time had a writing system, consisting of syllables and logographs, and a rich array of iconography, it should be noticed that hieroglyphic inscriptions similar to the word sacbe have been found on six inscribed stones associated with the Coba-Yaxuna causeway (Villa Rojas 1934). This glyphic compound is SAK-BIH-hi, transliterated as *sakbih* and this word is spelt and pronounced in the *Ch'olti'an* ("Classic Maya") way. The word is also known from the Hieroglyphic Stairway at Copan, but probably with a cosmological meaning. *Chante' sakbih*, means "the four white roads" (Stuart 2006:1-2). Other hieroglyphic examples of "road" can be found in the Dresden codex where the phrase "on the road" is spelled ta-bih, which is another Ch'olti'an-spelling (Houston, personal communication 2002). Yucatec for road can be spelled as *be, beh, bej* or *bey*. In Cholan languages road is spelled as *bih, bij* or *bir* (Dienhart 1989). In the cases where I use the Yucatec, Cholan or K'iche' spellings I refer to contemporary, Colonial, or late Postclassic uses. I will use the traditional spelling on established site names (Uaxactun rather than Waxaktun) and on names used in the PAY and CRAS projects (Sacbe 1 instead of Sakbe 1).

2.1.1. A short history of research

The ancient roads were described by the earliest Spanish conquistadors, as early as in 1524. Hernan Cortés, Bernal Diaz, and Diego de Landa made notes of roads in Tabasco, Campeche, Yucatan, Peten and Honduras (Denevan 1991:231). The Spanish chronicles used the term *calzada*. Diego de Landa mentioned a causeway between Ichcantiho (Mérida) and Izamal, and a causeway at Chichen Itza (Tozzer 1966:109, 179). Bernardo de Lizana (1988:56) noted causeways aligned to the cardinal directions at Izamal. Cogulludo (1957) mentioned paved roads during the 17th century. Stephens (1993) observed causeways at some sites during the 19th century.

The Carnegie Institution of Washington explored several sites and their causeways in the first half of the 20th century. Gann (1926:113) noted the causeway between Coba and Yaxuna, but it was Thompson and others (1932:18-27) who concluded that these two sites were connected. Bennett (1930) and Villa Rojas (1934) explored this large causeway. The latter travelled along the whole causeway.

Bustillos (1964) produced the first synthetic work on causeways and roads. Romanov (1973) explained processes that have destroyed or transformed causeways. Maldonado (1979a; 1979b) and Kurjack and Andrews (1976) discussed the political implications of causeways. Kurjack focused on settlement patterns and the development of states. Benavides (1981) and Folan (1983) have explored the causeway network at Coba and discussed its social implication. Freidel and Sabloff (1984) studied the causeways of the Postclassic settlement on Cozumel.

Two of the most extensive studies on causeways are the ones carried out at Caracol (Chase and Chase 2001a; Chase and Chase 1996; 2004a) and at Chichen Itza (Cobos 2003; Cobos and Winemiller 2001). Apart from other large causeway systems at El Mirador (Dahlin 1984) and Calakmul (Folan, et al. 2001), most research has emphasized single or a limited number of causeways at a multitude

of sites which would make a long list. Some researchers have also explored the linguistic meaning of roads (Bolles and Folan 2001; Keller 2001). Shaw (in preparation-a) is currently writing a book on the causeways at Yo'okop and Ichmul.

2.1.2. Classifications appearing in epigraphic, colonial and ethnographic sources

There were and still are many terms for roads in Yucatan. It was not until the late 19th century that sacbe began to be used in the historical literature in Yucatan (Bolles and Folan 2001:306). Today, sacbe is also used to describe rural roads covered with crushed limestone marl (saskab). Ancient, historic and contemporary road terminology is sometimes used to give some insight into the use and function of ancient roads and causeways. The Yucatec road terminology is the best known (table 2).

Yucatec	Translation	Yucatec	Translation
Be carro ¤	Truck road	Kochbaban be *	Wide road
Be che' #	Wooden bridge	Kol be ¤	Milpa road
Be kab #	Road Earth "Paths for fire break"	Luluth be *	Jump road
Be tun *	Stone road	Nap'al nap be #	Stony road
Buth be *	"Fill" road	Noh be *	Big road
Chibal be *	Lineage road	Sak be *	White road
Chux be *	Narrow road	Thuthul be *	Narrow road
Ek be *	Dark/black road	T'ubul be #	Straight road
Haban be *	Bush road, brecha	T'ul be #	Narrow road
Hol kan be *	Crossroad	Xay be *	Fork in the road
Holoknak be	Open road	Xoy be #	Short cut

Table 2. Some Colonial and present Yucatec road terms (* Bolles and Folan 2001; ¤ Forrest 1997; # Keller 2001).

The Spaniards tended to distinguish between roads and causeways. It seems that the Spaniards mainly followed roads, probably *brechas* (cleared paths in vegetation) rather than causeways, since the latter were used for pilgrimage, at least at Izamal (Landa 1959:55, 59; Lizana 1988:56). Contemporary people in the Yucatec area also distinguish between the Spanish derived words ***karreteras*** (highways) and ***rumbos*** (routes). For example, all routes in and around the Yucatec town of Maní connect with the forest, the ***milpa*** (a slash and burn field), the ranches and the towns that surround the town. The road is seen in several metaphors at Maní: the road as rumbo (knowledge and use of local resources), communication and migration (Forrest 1997:207).

There are some variations in the terminology of Yucatec roads. Bustillos (1964:19) mentions five types of roads. A wide road, free of stones, cut into the forest to gather construction materials is called *noh be*. Roads within a town are called *luluth be*. Stone roads are called *bokolbok be*. Short and straight roads are labelled *toh be*. Small and winding paths to milpas are called *col be*. Bolles and Folan (2001) give somewhat different explanations. *Noh be* is rather a *calzada* or a *camino real* (royal road). The *luluth be* is defined as an dirty road which forces the traveller to leap.

In terms of the actual physical roads that people used, it may be of interest to note that among the contemporary Yucatec, to walk on a road is to walk "over" and "in front of" it. To be off the path is to be *be paakil*, "behind it" (Hanks 1990:337). If a road reaches a landmark it is said to "rise" to it (ibid:311).

Roads in other contexts

Maya languages use the same root morphemes for nouns and verbs and the morphemes often have several meanings (Keller 2001:10). The word for road, which is *be*, is modified with adjectives such as great, white, black, etc. This gives a semantic complexity where words have several concrete and

metaphorical meanings. Be is used in greetings, general discourse, rituals, sayings and proverbs. Since be and its cognates are found in every Maya language there is reason to believe that it is an old morpheme (ibid:11).

Keller has analyzed Colonial and contemporary Yucatec sources and found over fifty distinct examples of the use of the word be, which she has organized into three categories: (1) Road (path, course, transit, bridge, canal and passageway); (2) Work (occupation, good works and government office); (3) Life (state of health, well-being, prosperity, present situation, course of life and destiny) (ibid:12).

The life history is *u ts'ola'n beel maak* ("the ordered road (of a) man"). In Colonial records birth is called *hok'ol be* ("step onto road"). When people are "seen on the road" they are being born. Even the birth of time is likened to a road or an arrival (ibid:13-14). The word road is used in similar contexts in Classic period inscriptions, such as the death phrase *och bih*, "entered the road", most likely the road to the Underworld and an existence beyond this (Montgomery 2002). The stairway of Temple 33 at Yaxchilan has 13 panels. These describe how king Bird Jaguar "entered the road" at the ballcourt to an Otherworld of some sort (Freidel, et al. 1993:351). The glyphic compound for och bih consists of a rattlesnake tail (*och*) and an ear spool (bih). Taube believes this represents the breath serpent/soul that passes through the road of the ear spool. Och bih is believed to refer to a rebirth related to fire, flowers and the road of the sun (Taube 2005:39-42). Even cities had their own life roads or destiny. The destruction of the town of Champoton (Chak'an Putun) was labelled *ka u satah ob be Chak'an Putun*, "they destroyed the road of Champoton" (Keller 2001). This should be interpreted metaphorically in which Champoton's life road was ended in relation to a *may*-cycle (a 256-year long cycle) (Rice 2004).

Thus, the day itself and the destiny of an individual was and still is likened to a road where the personal possibilities can be either "open" or "cut off" (Hanks 1990:337). In some Yucatec communities, road is included in the common greeting; *bix a bel* ("how is your road?"). A person's road is a metaphorical road that is one's well being and occupation. Important tasks are also roads and to accomplish something is to *ts'oksah be* ("finish a road"). To marry is called *ts'okan u beel* ("finish or complete one's road"). After marriage, the women follow the *icham be* ("husband road") and men follow the *atan be* ("wife road"). Matchmakers and advisors are called "road guides" (*k'amal be* in K'iche' and *aj bebesah be* in Yucatec) (Keller 2001:11). The term *aj mes* in Tzutujil means "sweeper", a person who "sweeps one's road" (Carlsen and Prechtel 1994). When the Yucatec describe their goals or occupations they call it "their road". The road of an individual is where he or she has been and is heading. Being "on the right road", is when a person is progressing toward his or her goal (Hanks 1990). There is a good road that people tend to fall away from, *ma' tu ch'a'ik be* ("not taking one's road"), or to follow a "false road" (*tus be*) (Keller 2001:13).

Be is also used to describe tubular or canal-like passageways. The urethra is *u beel wiis* ("its road urine") (Hanks 1990:312). A blood vein is called *u beel k'iik* ("its road blood"), a chimney is called *u beel buts* ("its road smoke"), and a canal is called *u beel ha'* ("its road water") (Keller 2001:13). The limestone conduit built on the stairway inside the Temple of the Inscriptions at Palenque (Martin and Grube 2000:168) was perhaps seen as such a road.

The bih glyph(s)

As mentioned, the hieroglyphic compound for road is bih (figure 2). The bih glyph can be found both as syllables (bi-hi), as a logograph (BIH), or as a combination of a logograph and a syllable (BIH-hi) (table 3). Bih is also known as the quincunx pattern, which resembles number 5 on a dice. This pattern is quite common and old in the iconography. It can be found on Late Formative earplug assemblages at the temple masks at Cerros (Freidel and Schele 1988a, 1988b). It is believed that the pattern resembles the four corners of the world and its centre point. A cache found at Cerros had five small jade pendants lying in the shape of a quincunx. Reese (1996:148) argues

that this cache indicates the path the ruler followed in the Underworld.

The quincunx pattern is also found in glyphs relating to time, such as in some forms of the *k'in* (sun/day) glyph (Coe and van Stone 2001:47). It is argued that the quincunx was associated with the sun's path (the ecliptic) and its position during the sunrise and sunset at the solstices (Milbrath 1999). In contemporary Yucatec the word be is used as a root for "day". *Be-heela e ~ be- la e*, means "today, nowadays" ("the road right here") and *ka a-be* means "the day after tomorrow" ("two road") (Hanks 1990:312). *Beel kaan* means "road of the sky" and probably relates to the path of the sun or the Milky Way (Keller 2001:21).

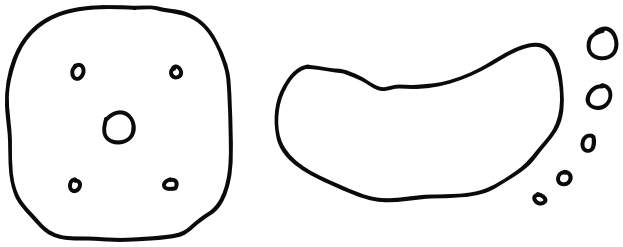


Figure 2. Two versions of the bih glyph.

It may be of some interest to note that the bih glyph sometimes is infixed in the *way* glyph ("companion spirit") and forms the word *waybil* ("sleeping room", "lineage shrine") (Freidel, et al. 1993:190-192). This effect is partly the result of the writing system, in which glyphs sometimes were infixed in other glyphs, but it could possibly have a deeper meaning of roads between different levels of the world through the waybil.

Another version of the bih glyph is in the shape of a footprint. In several Mexican codices, outside the Maya area, footprints indicate travelling (Miller and Taube 1993:113). The footprint version exists, for example, on page 39a of the Dresden Codex in which the logograms SAK-BIH are placed on the ground in front of a deity (Stuart 2006:1-2). The glyph may relate to the surface upon which the deity is walking

AJ-BIH-NAAH	*Aj bih naah* ("he from the road house" - Copan), Houston, personal communication 2003.
BIXAN-na	*Bixan* ("to go", "to walk", "travel", "went"), Montgomery 2002:44.
4-U-BIH K'INICH	*Chan u-bih K'inich* ("four are the paths of the sun"), Stuart 2006:3.
4-TE'-SAK-BIH	*Chante' sakbih* ("the four white roads"), Stuart 2006:2.
IL-bi-hi, IL-WAY	*Il-bih, il-way* ("see the road, see an aspect of the soul"), Houston 2006:141.
OCH-BIH	*Och bih* ("entered the road"), Montgomery 2002:192.
SAK-BIH-hi	*Sakbih* ("white road"), Stuart 2006:1.
Ta-bih	*Ta-bih* ("on the road" (Dresden Codex page 65b)), Houston, personal communication 2003.

Table 3. Examples of the bih glyph.

2.1.3. Archaeological classifications

Interesting as the present, Colonial period or epigraphic classifications might be, we do, in most cases, not know what they meant for past people. The classifications may not relate to causeways or the physical features we find today. Most of the Colonial period terms probably relate to informal trails or brechas. Archaeologists have therefore developed different approaches to the classification of Prehispanic causeways. Most classifications derive from the dimensions of causeways. The causeways varied between 1 meter up to 70 meters in width (at Tikal) (Harrison 1999) and from a few meters to 100 350 meters in length between Coba and Yaxuna (Villa Rojas 1934:201), and from ground level to at least 4 meters in height (Shaw in preparation-a). However, apart from the vast differences in dimension among these structures there are other differences which make the classification troublesome. The main archaeological definitions have settled for a two levelled

category of causeways; the *intrasite* (within a site) and *intersite* (extending outside a site and sometimes connecting with another site).

In my view, there have been three archaeological ways of classifying causeways: site layout, morphology and length. A problem with most classifications is that they assume the importance of overall site layout for the understanding of each single causeway. These classifications do not always take account of the timing of road and site construction. A larger causeway network may have changed over time. This is best exemplified at Caracol, a site that shows different periods of expansion of its extended causeway networks (Chase and Chase 2001a:262; Chase and Chase 2004a). Other examples include Coba (Folan 1983), Chichen Itza (Cobos and Winemiller 2001) and to a lesser extent Ichmul (Flores and Normark 2004a, 2005b).

Site layout

The site-layout approach looks at the whole settlement pattern rather than the single road. These causeway layouts are *linear*, *triadic, cruciform*, *radial* and *dendritic*. Some sites may have more than one layout. Coba is believed to have had a Late Formative cruciform layout and during the Late Classic it became a radial pattern (Shaw in preparation-a).

Shaw (in preparation-a) suggests that linear causeway systems show no hierarchy as they connect architectural groups of similar size. The linear causeway system can be exemplified by Sayil where the north-south causeway connects several architectural complexes (Dunning 1992; Sabloff and Tourtellot 1991; Smyth and Dore 1992). It looks like "beads-on-a-string" (Tourtellot, et al. 1992:94). Labna has a simpler version of this pattern where the causeway connects a pyramid with a three-story palace (Kurjack and Garza 1981:301). Harrison (1981:272) describes sites in southern Quintana Roo with multiple and spatially dispersed complexes of buildings (clustered nucleation), often 2-3 kilometers from each others. Dzibanche has four major architectural groups, connected by causeways. Nalda (2005:234) sees the groups as one site as the groups appear to have had separate functions. This is the most common pattern, particularly at many medium-sized sites which have only one or few causeways. Yo'okop could be classified as such a site.

An unusual form of causeway pattern is the triadic one in which three causeways radiate out from a central point, with no connection to cardinal directions. To my knowledge, only Ichmul and maybe El Mirador (Dahlin 1984; Folan 1991) have this pattern, although Seibal could potentially be included here as well, but its causeways are aligned towards the cardinal directions.

The cruciform or quadripartite causeway pattern has a central point and four extensions, often in the cardinal directions. As will be discussed later, the quadripartite pattern in iconography is believed to relate to cyclical completion and it may relate to the path of the sun. The pattern has also been connected with the world tree and its main branches (Dunning 1992:137). The centre and its four quadrants also form a quincunx, which also is the hieroglyph for road. San Gervasio on Cozumel is a Postclassic example of a quincunx-ordered site (Freidel and Sabloff 1984). Ek Balam has three core-outlier causeways to the north, east, and west and two shorter ones to the south and southwest (Ringle, et al. 2004:497). Coba (Folan, et al. 1983), Dzibilchaltun (Kurjack 1974), Izamal (Lincoln 1980; Maldonado 1979a, 1979b, 1990), El Naranjal (Reid 1995), Seibal (Tourtellot 1988), T'isil (Fedick and Mathews 2005) and Yaxhom (Dunning 1992:180-187) have similar patterns. The cores of these plans are either massive architecture or *cenotes* (sinkholes), such as at Dzibilchaltun (Dunning 1992; Kurjack 1974) and T'isil (Fedick and Mathews 2005). As a contrast to the other examples, at Seibal, the centre of the causeway system is on a lower topographical level, and the western and eastern termini have larger architecture (Dunning 1992).

The cruciform and triadic patterns are specific forms of the radial causeway system. Ichcantiho (Mérida) may have had a radial causeway system (Ligorred 2001). Sites such as Chichen Itza (Cobos and Winemiller 2001), Caracol (Chase and Chase 2001), Calakmul (Folan, et al. 2001) and Ichmul (Flores and Normark 2004a, 2005b), had causeways that ran off in radial directions, similar to the

spokes of a wheel.

Another form of the radial pattern is the dendritic pattern which has architectural groups in concentric rings that surround a site core. The causeways link different parts to the site core, such as at Caracol (Chase and Chase 2001) and Chichen Itza (Cobos and Winemiller 2001:284).

Webster and others have hypothesized that the earthworks surrounding Tikal may have formed a causeway-like road that may have been initiated to encircle Tikal's hinterland. This construction project, whatever its original intention, was never finished (Webster, et al. 2005).

Morphology

The morphology of a single causeway could potentially be used to classify causeways. Causeways may or may not include road-beds, curbs, pavements, sidewalls, parapets and/or drainage culverts. A causeway ended or began at different kinds of termini, such as ramps, temples, plazas, quarries, cenotes and caves. Causeways also varied because of the nature of the terrain, such as topography, surface conditions, hydrology and avoidance of valuable agricultural land and the accessibility to labour at the areas of construction (Trombold 1991:4). Some of the causeways were partly constructed to protect travellers from waterlogged areas (Bolles and Folan 2001:306). Another form of causeway has parapets where water may have been channelled, such as those at El Pilar in Belize (Ford, et al. 2001). However, the morphology is too varied and would be difficult to use for classification on an interregional level.

Length

Another way of categorizing the causeways could be by way of function where the differences between causeways were a matter of dimension. Short intrasite causeways probably had a wider variety of functions. They could be used in water management, ceremonial processions, demarcations of "barrios" (districts) or defining sacred space. Longer roads would have had greater political importance, especially in an area with almost no population, where causeways unite site core and outlier. Thus, intersite causeways can be seen as integrative structures. However, such categorising assumes ontologically secure categories concerning human activity that is always the same. It assumes that we can know and narrow down the functions to one or few categories and isolate them from other activities.

Still, the length of the causeway is generally used to categorize the causeways. However, this contradicts some modern usage, which sometimes categorizes roads by width rather than by length, in that the vegetation cover along the route seems to be important. The "open roads" are more or less straight and wide enough to provide visuality over long distances. They have also been in use and maintained for a long time. The "small paths" are trails that pass between and around objects. Some of these paths are overgrown. The "rough trails" are the least open. The term *ek be* ("black road") indicates that the path is darker from the vegetation cover than the open and cleared road (Hanks 1990:311).

One can wonder if some sort of standard measurement of length and width was used in certain areas. For example, Abrams argues that this was the case during the construction of masonry buildings at Copan but these measurements were for masonry structures of smaller size than an extended causeway (Abrams 1994:71). In Colonial times, a *luub* was one league, or about 4.19 kilometers (*legua legal* for juridical matters) or 5.5 kilometers (*legua común* for everyday measurements) (Chardon 1980:302). If these lengths relate to Prehispanic equivalents are not known since the league is a Spanish unit. However, luub was used in earlier times and it also means zero and the completion or end of a journey (León-Portilla 1988:43). Luub is also the name for a resting place along a causeway (Bolles and Folan 2001:306). The triadic causeways of Ichmul are 13 meters wide and they all have almost the same length and the other two causeways at the site have roughly half the width and length (Flores and Normark 2005b). The beads-on-a-string causeways

at Yo'okop are similar in width as the triadic ones at Ichmul. Therefore, it is only the width that might be of interest while studying the possibility of standardized units of measurement at Ichmul and Yo'okop since the causeways connected pre-existing locations.

However, length is considered to be a good way of categorizing causeways, since it reflects the spatial extent of some form of social integration and interaction (Shaw 2001g). The classification from length has also the advantage that the other spatial dimensions of a causeway (height and width) may change along its course. Benavides (1981:147-168) categorizes the causeways at Coba into three levels: *regional, zonal* and *local*. Folan and others (2001:293) have created a four-level category for the causeways at Calakmul: *regionales, estadal, urbanos* and *vecindarios*.

Shaw has also proposed a three-level category based on the length of causeways: *local intra-site*, *core-outlier intra-site* and *inter-site* (Shaw 2001g:262). She originally believed, from a smaller sample, that the categories were clearly separated from each others in terms of their length. Based upon a larger sample, she now believes that the distribution is more continuous (Shaw in preparation-a). The following description follows Shaw's categories.

The first and most common category of causeways links major architectural groups in a high-density portion of a the core of a site and is less than one kilometer long. Seventy eight percent of the causeways in Shaw's sample of causeways throughout the Maya area are less than 500 meters in length (Shaw in preparation-a). This length may relate to the distance people usually travelled in a day or in ritual processions. It may also be the distance under which some form of political control could be performed (Shaw 2001g:265). Bolles and Folan (2001:304) argues that *cochbaban be* may refer to wide and short causeways that connect monumental groups of architecture within the site core. The local intrasite causeways may have determined the extent of the site core, and as such they will vary in length (Shaw in preparation-a). Kurjack (1977:225; Kurjack and Garza 1981:301) argues that these shorter causeways may be the earliest form of causeway there is. However, there are plenty of examples of short internal causeways at the end of the settlement history as well. Examples of the local intra-site category can be found at Ake (Maldonado 1995), Chichen Itza (Cobos and Winemiller 2001), El Pilar (Ford, et al. 2001), Xunantunich (Keller 1994), Copan (Fash 1983) and three of the causeways at Yo'okop (Shaw 2005b).

The core-outlier intrasite causeway is between one and five kilometers long and links peripheral loci in a less densely populated area to the site core. The area in between may have been less densely populated. Shaw suggests that the areas connected by these causeways worked as a single social unit (Shaw in preparation-a). This category is exemplified by Sacbe 2 at Yo'okop and the five causeways radiating out from Ichmul.

The intersite category includes causeways more than five kilometers long which connect different sites that may have been independent or vassals. Less than eight percent of Shaw's sample belongs to this category. It may equate with the regionales, *noh be* or *chibal be* of Folan and others (2001). This category has not been found in the Cochuah region, but is believed to be exemplified by the 100 kilometers long Coba-Yaxuna causeway which bypasses the Cochuah region to the north (Folan 1983). There are indications that Sacbe 5 at Calakmul may have run all the way to El Mirador. This 38 kilometers long causeway continues 30 kilometers further to Tintal (Folan, et al. 1995:281). Caracol also has causeways in this category. Ten of the known causeway termini could have been categorized as minor centres if they had not been incorporated by the expanding centre (Chase and Chase 2001).

The intersite causeways may have been a way to extend and maintain boundaries. Kurjack and Andrews' (1976) study of boundary maintenance in northern Yucatan, suggests that several fortified centres, such as Cuca, Ake and Muna lie halfway between Ichcantiho (Mérida) and Izamal. In this area there are long causeways that connect the major centres with some of the sites halfway to the neighbouring large centre, making them border sites.

Mathews (2000) has proposed that a road from Ichcantiho traversed the peninsula to a coastal

place near modern Puerto Morelos (Fedick, et al. 1995; Mathews 1998). This would have been a 300 kilometers long causeway, but so far, the whole length has not been determined (Mathews and Lizama-Rogers 2005).

Such long roads may have had some additional features not found along shorter causeways. Although being quite different structures, the Inca roads had roadside lodgings and storage areas called *tampu* (Stanish 1997). Messenger-runner posts were located every one to eight kilometers along the roads. Shrines and lesser sites were located along these roads (Hyslop 1984; LeVine 1992). The Coba-Yaxuna causeway has some structures attached to it and the causeway passes through several settlements (Villa Rojas 1934). However, these settlements or structures have not been investigated. No lodgings are known for sure in the Maya area. *Xay be* refers to a fork in a road and roads in the Yucatec area had resting places (luub) where paths converged. These places had stone tables where a traveller could rest the load without squatting. Forks in the road were also places where ambushes and warfare took place according to the Books of Chilam Balam (Bolles and Folan 2001:306).

Few regional roads are known in the Maya area, but an unknown number of the Colonial and modern roads have been built upon older routes. Causeways may therefore lie under these constructions (Shaw 2001g:262). The lack of a known regional road network has been used to argue for the decentralization of political power in the Lowlands. However, there were also informal roads within and between sites in the Maya area. These might be what are referred to as *chux be, ek be, luth be/luluth be*, *haban be*, *holoknak be* and *thuthul be*. They were bush trails with no formal road construction attached to them. These may have formed the larger network of regional roads/paths which was noted by the 16th and 17th century Spanish chroniclers in northern Yucatan. This network was used by pilgrims from places in Chiapas that travelled to Cozumel (Bolles and Folan 2001:306).

Another possible way to classify causeways could be to calculate the volume of construction material from the length, width and height and get a basic estimate of labour investment, although one would also need to calculate costs for transport, plastering, etc. to get a more correct estimate (Abrams 1994). The Coba-Yaxuna causeway is 100 kilometers long and roughly eight meters wide and consists of around 750,000 m^3 construction material (75% of the Sun pyramid at Teotihuacan). The causeway is arguably the largest single construction in the Maya area (Shaw 1998:273). At Ichmul the volumes of the causeways range between 2,200 to 26,310 m^3 (Flores and Normark 2005b).

With all this said, what is a causeway? As no causeway clearly conforms to a definite overall ground pattern, it may be misleading to call the causeways roads, since this automatically associates them with the Western concept of a road (Schwake 2000).

To include as many features as possible within this material category, I will simply describe a causeway as: *an extended, linear, two-sided stone platform of variable height, width and length with a constructed surface, used for separating and connecting various points by artificially levelling the intervening topography with a regular grade*. However, the problem with classification is the desire to try to fit all causeways from the whole Maya area, from all time periods, into a typology of a whole corpus. As will become apparent later, I seek site specific causeway patterns, rather than a universal classification and explanation. I use a *populationist* approach rather than a *typological* approach. As shall be argued later, it is the tendencies immanent in the materialities that generate the populations, not an essential type or form.

2.1.4. Construction and morphology of a causeway

The construction of a causeway was similar to that of a house foundation or a platform. Abrams (1998:126) reduces the construction process of masonry structures at Copan to four operations; procurement of materials, transport, manufacture of components and the actual construction.

This most likely was the case with the causeways in the Cochuah region.

Dry materials, good working conditions, and the off season of agricultural activities are believed to have made it possible to construct masonry structures such as causeways (Abrams 1994:43). Thus, construction was probably done in the dry season, from January to May. Abrams (1994:112-117) shows that the procurement and transport of construction material at Copan was simple and would have included general labourers. Manufacture of masonry blocks was also simple. Keller argues that the parapet walls of the causeway at Xunantunich could have been constructed by unskilled workers but that plastering involved specialists (Keller 1994).

The course of a causeway could be consistent since workers probably lined up poles along the projected path to create a straight route, maybe laid out from an elevated place (Folan, et al. 1983:82; Shaw 1998:269). The intervening space was cleared to form a brecha. This was done at Chan Kom when the villagers outlined a roadway to Chichen Itza (Redfield and Villa Rojas 1962:30).

Groups of workers are believed to have worked at assigned sections of a causeway (Benavides and Robles 1975). One causeway at Coba had some sections finished which were separated by unfinished or missing sections (Shaw 1998:269). The short and unfinished Sacbe 4 at Yo'okop seems to have been constructed in at least two sections. This may represent either a construction pause or mean that it was constructed by at least two working parties (Shaw 2001c:27). A similar pattern has been found at Xunantunich in Belize (Keller 1994) and at two places along the Ichmul-San Andres causeway (Flores and Normark 2004a, 2005c).

Changes in the course of longer causeways may be the result of it being constructed in various sections or that the causeway connected several pre-existing sites between the termini. There might also have been various obstacles. Some causeways at Calakmul change their angles so they can bypass *bajos* (Folan, et al. 1995:277). The Izamal-Ake causeway and the Uxmal-Nohpat-Kabah causeway both connect several locations, probably the result of later additions to existing sites (Carrasco 1993; Maldonado 1995:72). The eastern causeway at Copan has a gradual curve that connects several locations (Fash 1991:155). Several of the causeways at Caracol are not straight, but curve (Chase and Chase 2001a). The Coba-Yaxuna causeway is straight but there is some adjustment in bearing at six places. These are all found at places with ruins that appear to pre-date the road construction (Villa Rojas 1934:199, 206).

The six carved stones from the Coba-Yaxuna causeway are very similar in design, and they begin with what appears to be a date. The third glyphic compound on each stone appears to be SAK-BIH-hi. Stuart (2006) believes that the carved stones are dedicatory monuments for this

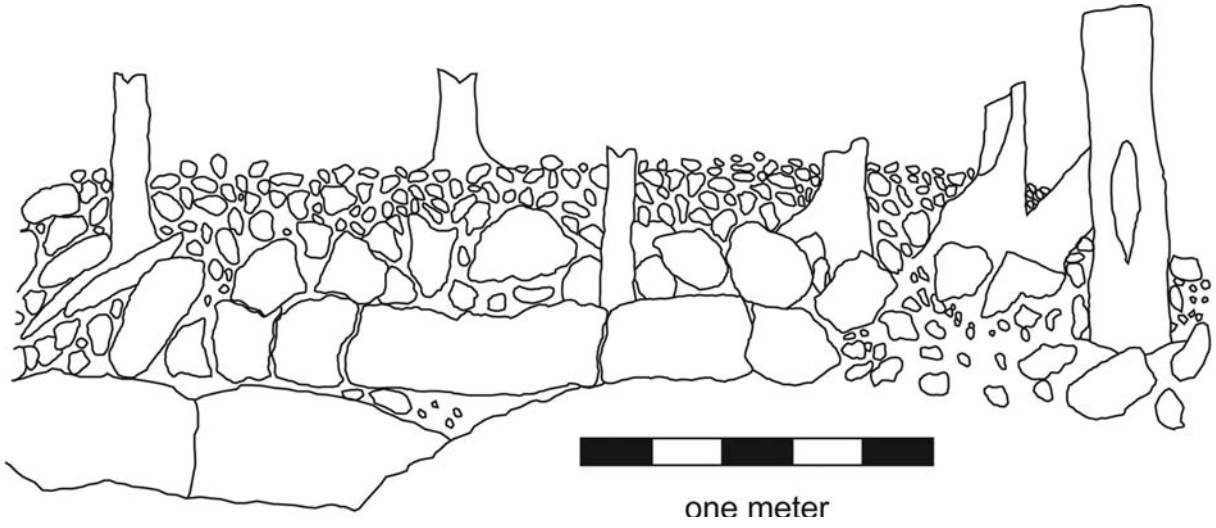


Figure 3. Profile of the Ichmul-San Andres causeway.

causeway. However, these six monuments appears to have different dates (too eroded to be read), and could possibly relate to dedications of different sections of the causeway. Although the six stones were all found in different places closer to Coba, it should be noted that the causeway changes its course six times, at settlements along its course (Villa Rojas 1934), but there might be more non-discovered stones.

After the course of the causeway had been established and the ground was cleared of humus and debris down to the natural subsurface, two parallel dry-laid retaining walls of both cut and uncut stones were laid down in order to contain construction fill (Shaw 2001b; Shaw, et al. 2000). The road bed consisted of either rocks, packed soil or a mixture of soil and shell (Folan 1991; Keller 1994). It was levelled by placing the largest uncut boulders at the bottom. The size of the fill decreased upwards to cobbles and gravel at the top (figure 3). Some of the medium-sized stones formed boxes, which were filled with other medium sized stones. Such boxes have been found along the Ichmul-San Andres causeway and on Sacbe 4 at Yo'okop (Flores and Normark 2004a, 2005c; Shaw 2001c). A causeway may have changed its fill along its course. The Uxmal-Nohpat-Kabah causeway is only a scatter of stones in some bajo areas instead of being a raised causeway (Carrasco Vargas 1993:201). At Chichen Itza, some causeways have a row of small stones that frame the roadway which is filled with red soil (Cobos 2003:224).

Saskab often covered the surface of a causeway. This is generally not found due to its exposure to the environment. Some causeways were resurfaced, such as Calzada Kan at Nakbe and Sacbe 2 and 3 at Yaxuna which have several stages of construction (Johnstone 1994; Suasnávar 1994:336). The first two phases of Yaxuna's Sacbe 2 date back to the Late Formative and the causeway was widened and raised at a later time (Shaw in preparation-a). This pattern is similar to the activity of covering older structures with new ones. It strengthened the core of the final building (Abrams 1994:69). No similar pattern has been found at Ichmul or Yo'okop where all causeways appear to have had single construction phases.

In some cases, lime plaster has been used to create a solid surface (Thompson 1928). Plaster was used since the walls and road bed lost their strength from the tropical rains. Plaster manufacture needed specialists. Lime plaster has a relatively high cost because of the need to burn large amounts of fuel (Abrams 1994:73). At Xunantunich, two plaster coatings were laid on the ballast of one of the causeways. These coatings were probably two steps in the same construction and not two separate phases. The lower plaster surface was laid under the interior parapet. The upper surface covered the width of the road bed as well as the parapets in one continuous application (Keller 1994).

The surface made out of plaster or saskab was flattened by large stone rollers, like the one found in connection to the Coba-Yaxuna causeway (Villa Rojas 1934), or large and heavy tree trunks (Shaw in preparation-a).

Some causeways were used in construction of other architecture. Sacbe 2 at Calakmul is associated with Structure 1 and may have been in use during the construction of the structure. It seems to have been used to transport saskab and stone. Later on it served as a communication route for those who used the structure (Folan, et al. 2001:294). The Bryan and Murphy Causeway at El Pilar leads from a quarried hill up to the large Plaza Copal and may very well have had the same function as at Calakmul (Ford, et al. 2001).

2.2. The implications of causeways in past social formations

I shall describe earlier models and theories of causeways and in this process show their greater context. The reasons behind site-planning at centres in the Maya area have usually been attributed to political, social, economical, functional, ecological or cosmological reasons. However, there are many difficulties in the applied use of these explanations. A major difficulty is that large and old

sites, such as Tikal and Calakmul, had complex site layouts because site planning was not static, but changed through the histories of the sites. Their layouts are not as clear as for example Teotihuacan in Central Mexico, which was laid out early in the history of the site and then maintained (Ashmore and Sabloff 2002:201). Therefore, some researchers seek early sites or sites with a short history. T'isil in the Yalahau region is a short-lived site that is believed to reflect design principles (Fedick and Mathews 2005). It is also argued that short-lived second-level sites, for example, in the Puuc area can show comprehensible designs (Webster 1998:18, 21). I believe that design "principles" are not static and that even "short-lived" sites have a too varied layout for there to have been any universal principle.

In some Mayanist research, there is still an issue whether or not some of the architectural features and ideas behind site layout found in the Maya area originally diffused to the area from another area, or if it was "indigenous". For example, Clark believes that the so-called E-groups and their associated royal compounds came to the Maya area from the west, whereas Hansen argues for the opposite direction (Clark and Hansen 2001:18-32). Although I am not arguing that this is not of some relevance, such diffusionist ideas are usually joined with other "cultural" traits that can be explained by local developments. My discussion of site layout shall not problematize the origin of various elements. In short, the task of trying to find the geographical and temporal origin or reason(s) behind design, tries to find an original ideal that has never existed.

2.2.1. Introductionary notes on settlement layout in the Maya area

Since causeways were planned structures, there were intentions behind them. From a humanocentric perspective, causeways are structures constructed to integrate, control, dominate and separate people and communities. There has been a multitude of different theories or models that try to explain these various intentions and reasons behind urban designs.

As the causeways sometime link a heavily constructed area with less built up environments, one could argue that they also cover different levels of planning. For example, Marcus (1983b:197) argues that the centre of sites was planned and the periphery was unplanned. This has led Ashmore and Sabloff (2003:231) to the conclusion that different placement and orientation principles of structures can be applied in different zones of a site. To them, directionality (cardinal directions, inter cardinal positions and the centre) connected with cosmology and long lasting political affiliations, can be found in the layout of centres in the Maya area (Ashmore and Sabloff 2002:202).

Ashmore and Sabloff (2002:203-210) suggest that the shift from the Late Formative east-west axis in site planning (as seen at El Mirador, Nakbe and Tintal), to north-south during the Classic period reflects changes in political authority. This change is said to have been a switch from the importance of the sun to a focus on the king and dynasty. The Central Mexican site of Teotihuacan may later have reinforced this shift in site layout in the Maya area. There have been several proposals of similar political explanations for other sites as well. These suggest that there were regional political reasons behind urban designs. Dunning and others (1999:657) argue that Late Classic site layout may relate to the regional conflicts between Tikal and Calakmul. Builders at lesser sites would have copied site layout of a more powerful site because of perceived political benefits. Iannone (2005:31) believes that Minanha in Belize emulated the plan of Calakmul or Tikal. Quirigua would have copied Copan (Fash 1991:150). Uaxactun may have been the model for several other sites in its vicinity (Houk 2003:54). Other examples come from the Three Rivers region where Dos Hombres is believed to mimic La Milpa and Chan Chich would mimic La Honradez (ibid:55, 60). In the Northern Lowlands, Labna is similar to Sayil, Uxmal is similar to Kabah (Dunning 1992; Maldonado 1995) and Tamanche is believed to mimic Dzibilchaltun (Kurjack and Garza 1981).

The ideas of site mimicking have also been used in the galactic polity model (Demarest 2000). In such a view, the main centre is often built as a cosmological model. The central governing centre

is replicated at satellite centres or in different sections of the same site (Tambiah 1977; Geertz 1980). Kristan-Graham (2001:333) argues that the architectural groups connected by causeways at Chichen Itza have similar buildings that mimic the site core in minor versions.

However, Fahlander (2007) is pointing out that mimicking, at least in artefacts and clothing, may be a subversive strategy to appear harmless while maintaining hidden agendas. The construction of certain buildings and layouts, that mimicked similar patterns at a greater and a more prestigiuous centre (with which the mimicking site is believed to have had a subordinate relation), may therefore have been ordered by local authorities in order to appear subversive. This probably gave political benefits, but for other reasons than assumed by proponents for the site mimicking models.

There might be ecological/agricultural reasons for site layout. The northern sites of Sayil, Yaxuna and Coba have, in one sense, a similar settlement pattern. Structural density is highest near the site centre where most structures are built of stone. With an increasing distance from site centre the density drops and foundation braces become more common. These sites have an almost empty space surrounding the core before there is a settlement aggregation around minor centres (Shaw 1998:280). The intervening area, crossed by causeways or other non-preserved routes, is usually seen as agricultural areas. For example, Tourtellot and Sabloff's (1989) research at Sayil shows that the site core is roughly 0.5 km^2 large, engulfed by a four km^2 large periphery with dense settlement. Outside this area there is an almost vacant intersite area of one to two kilometers before satellite sites show up (Shaw 1998:27). This scenario is similar to what is known of Ichmul.

Even if we set the focus on the single structures and their alignments, design and location within site cores, it is still a complex scenario. The urban design of site centres, particularly in the Southern Lowlands, could be narrowed down to two primary ideas: axis and enclosure. The axis is an imaginary line around which architecture is arranged. Enclosures are used to define space. Bilateral symmetry is common in this arrangement (Wernecke 1994). Some of the architectural arrangements in the Cochuah region could fit such principles, like in the Central Acropolis of Ichmul.

However, I do not agree with the ideas of site design mimicking, political benefits or "specific Maya" basic design principles. Most of these site layout models are static and fixed. Golden has proposed a more dynamic view in which architectural constructions were influenced by contemporaneous notions of chronology, cosmology, local environmental patterns of earlier settlement and social needs (Golden 2002:80). A site was never finished, and constantly new material additions gave buildings new associations (ibid:92-93). Webster (1998) argues that large portions of sites were not designed at all. They are historical accretions.

Therefore, Smith (2003) questions Ashmore and Sabloff's assumption that site layout reflects cosmological, political or energetic relations. He argues that all factors played a role. What looks like planned and/or cosmological layouts may be the product of unintentional nonlinear growth dynamics. Architecture can act as mediators for the long-term continuity (ibid:223). In fact, large scale architecture, terraces and drained fields, are assumed to be inert and affect social formations more than other materiality (Webster 1998:19).

As Martin shows, with only a few examples, the settlements are very different among some of the largest Late Classic sites. They may have been the result of different local needs rather than relying on some united cosmogram or basic design principles. Because there were so many concentrated palaces and plazas at Calakmul, it allowed close communication. Local heirs from Calakmul's allies are believed to have been living as representatives or as hostages at the large centre. This may explain the size and extent of the palace structures (Martin 2001a:183). The courtly space is believed to have been more important at Calakmul than the need for ceremonial and ritual space. Tikal's royal court was more dispersed and Caracol had a much more dispersed pattern. The causeways at Caracol may have been used to integrate portions of the royal court with the site centre, since the causeways shortened the distance (ibid:176).

Another important factor proposed for the design of the centres has been "ancestor veneration", such as in Harrison's "triangles" of site layout in Late Classic Tikal. He assumes that buildings were built in line with other buildings that related to earlier rulers (Harrison 1999). Ancestor veneration is often believed to have been central in the Maya area from the Middle Formative and onwards (McAnany 1995). However, Joyce, argues that the preconceived idea of relating pyramidal structures to ancestors may just be an unintended outcome of social action. As she writes; "from our present perspective, looking backward, we are apt to interpret what we can see were the outcome of actions as those intended by past actors. But what we see is as likely to be a result of unforeseen effects of decisions made with other goals in mind" (Joyce 2004:5). It is better to look forward in order to model the intended and unintended consequences of past actions (see also Cornell and Fahlander 2002b; Normark 2004a).

Apart from the problems of finding a "law", "principle", "reason" or "meaning" behind site layout, we also have the problem of determining the extent of a site and its social/political extent. Based upon ceramic data, court mobility is claimed to have occurred between the sites of Buenavista del Cayo and Cahal Pech in western Belize. Court mobility means the transmigration of the whole, or part of the court, from one palace to another within the same territory on a seasonal basis. It is believed that the court stayed at Cahal Pech during the hot dry season and at Buenavista during the rainy season (Ball and Taschek 2001:166). Moreover, site layout may reflect seasonal movement, both between palaces, between communities and also between field huts and permanent settlement (Ford 1986).

In other words, there is much to say about static models of settlement patterns and site layout. These site layouts are believed to have reflected social, political, economical and cosmological conditions. I shall take a closer look at this in the following chapters.

2.2.2. Socio-political organization

The roles of causeways in social and political organization have been important in Mayanist studies. Mayanists discuss the identities of people or institutions at the various points where the causeways connect, and how these related to other people within a settlement. Causeways were usually associated with a ceremonial centre and therefore assumed to relate to the ruling elite. However, we do not know much about how different groups were integrated or separated by these linear features, despite various claims concerning social organization. The themes concerning the socio-political layout of causeways run from segmentary lineages, house societies, wards (administrative districts), ruler-ruled relations, the function of the royal court, overlordship, polity relationships, etc.

Social formation and locale

Throughout this thesis, I shall not use any of the organizational concepts proposed by various Mayanists except when I describe the standpoints of others. These different organising concepts will all succumb to *social formation* since institutions and groups are created by social interaction that eventually fades away. Since the institutions and groups seldom are clearly demarcated and do not always overlap, there is seldom any use of having a concept such as "society". In most cases society is believed to be related to "polity" or "state" which are other concepts that are not easily defined. "Society" cannot be seen as the cause for the existence or stability of other action. There is no all-encompassing society. Technology studies have shown that many features of social formations are dependent on the capacity of materialities to construct and direct social order (Latour 2000:113). In this process there cannot be any stable ontological unit, such as society, lineage or *multepal*. The concept of social formation lacks a predefined description of a largely unknown past social world. It is a general and analytic concept to describe known and unknown social groupings, series and institutions which lived in more or less daily contact in a loosely defined spatial and temporal setting.

A social formation is therefore neither a "society" nor a "culture". People of various social status, "gender", "ethnicity" and age have different positions within the traditional abstractions, such as community, lineage, etc. In the social formation, these identities are not specified. In other words, social formations are not homogenous, or tightly closed units (Cornell and Fahlander 2002b:63-67).

Cornell and Fahlander (2002a) also propose the use of a *locale* to define the spatial dimension of archaeological studies. This locale is determined by the researcher since no matter how we define a locale there will always be influences from outside that area. We need to draw the boundary somewhere and it will always be arbitrary, and so were social boundaries in the past. The locale is an area that had some sort of impact on the people living inside its presently defined boundaries. People who form heterogeneous groupings within this locale had different identities and could sometimes extend their relations outside the defined locale. In my description of Ichmul and Yo'okop, the extent of these two locales is whatever has been mapped or visited. The locale can be connected to other locales in a network since a total spatial coverage is impossible to obtain.

Some basics in Mayanist socio-political models

Central in most studies on socio-political organization in the Maya area is the distinction between kingship and kinship, a relationship assumed to have originated in the late Middle Formative (McAnany 1995). It is currently believed that the roots of kingship (*ajawlel*) in the Maya area can be found in the Mirador basin in northern Guatemala sometime between 600 to 400 B.C. where the first "states" or "polities" emerged around 300 B.C. (Hansen 2001). Some argue that this institution "diffused" into the Maya area from other "cultures" (Clark and Hansen 2001:1). However, Estrada-Belli (2006:57) shows that the Lowlands, during the Middle Formative, followed patterns similar to the Olmec area, but did not derive from them.

It has often been argued that the Classic period kings legitimized power through genealogy and divinity in public areas by monumental art. This has been seen as different from a supposedly less individualised kingship during the Late Formative. However, there are indications that there is much more continuity between these periods in terms of royal symbolism than once believed (Estrada-Belli 2006:74). Still, the general consensus is that the kingship as an institution emerged in the first century B.C. and it became divine around A.D. 200 (Freidel and Schele 1988a). Grube and Martin (2000:149) argue that the divine status emerged around A.D. 400.

There are major assumptions embedded within the definitions of these early "polities", assumptions that are believed to relate to all social formations until the Spanish conquest. These assumptions form part of most macro-level models. This list is modified from Abrams (1994:80):

- Rulers had a limited centralized control of political power. However, some researchers suggest a greater centralized power (Chase and Chase 1996).
- There was an abundance of positions within the social hierarchy.
- The royal and elite power either depended upon ideology or upon agriculture, tribute and services provided by commoners. If the polity grew, so did the administration which quite often was funded by tribute, warfare and luxurious systems that usually inhibited further growth.
- Kinship obligations were dominant although individuals had obligations in other social corporate groups as well.
- The rulers controlled and distributed the products made by the corporate groups.
- There was a worship or veneration of ancestors.

These points are quite general and could be applied in many areas of the world. As shall be seen in the following pages, most socio-political models follow or deal with these points and this

affect the way in which causeways have been interpreted. Although there was no overall social organization that looked the same everywhere in time and space, it has generally been assumed that the social organization and the primary identity in the Maya area consisted of patrilocal, sometimes segmentary, patrilineages. This identity is believed to be ancient. Ringle (1999:185) argues that "the *clear* continuities between the Formative and Classic sites are due in part to the persistence of segmentary organization among many Maya polities" (my emphasis). Rituals are assumed to be politically important in segmentary social formations because centralized political leadership and bureaucracies are either weak or underdeveloped. However, one might wonder where the evidence for segmentary organization in Formative contexts come from, other than by extrapolating backwards from later and better known periods and either assuming cultural continuity or predefined cultural evolutionary stages.

Therefore, a common Mayanist approach is to use ethnographical, ethnohistorical or early Colonial sources to interpret Prehispanic social formations. These have had a great impact in Mayanist models, and to me, these act as constraints to archaeology. It is the "tyranny" of the ethnographic and historic record. One of the most important analogies for explaining Prehispanic socio-political organizations comes from Roys (1957). He discussed the political organization in the early sixteenth century of those provinces in Yucatan that had a three-level organization. Such a model has been deployed at other areas and periods as it is assumed that questions of settlement patterns can be answered by this model, or by modifications from it.

In this model, the lowest level is that of the ***kuchteel***. It is described as a ward or a barrio of a town. Quezada (1993) suggests that people of a kuchteel had access to land parcels. The kuchteel was also a taxation unit. The ***aj kuchkab*** represented the kuchteel and he was elected and there is no evidence that he was a lineage head. (Ringle and Bey 2001:269).

There was a hierarchy of smaller towns (***kah***) that governed dependencies (***batabil***). A batabil was governed by a ***batab***. The ah kuchkab was a member of a council that helped the batab to make decisions and to collect tax and tribute (Rice 2004:39). The batab had several officials. One of these was the ***holpop*** that was responsible for festivities in the ***popol na*** (council house) (Ringle and Bey 2001:271).

The batabs were subordinated to the ***jalach winik*** who controlled a ***kuchkabal*** ("province"). Cochuah was such a kuchkabal. These, the highest level in Roys' model, were at least 18 in number (ibid:268). Roys argues that some of these were centralized under a jalach winik, and other kuchkabals lacked primary centres. The province was a territorial entity according to Roys. The jalach winik resided in a large town (***noh kah***), or what the Spaniards called a ***cabacera*** (Quezada 1993:61-64; 2001:26-27). Roys (1943:11) suggests that the kuchkabal was the jurisdiction subject to a certain centre. Quezada (1993) and Okoshi (1992) argue that the kuchkabal always was connected to a toponym. For them a kuchkabal was the administration of several subject towns by a higher ranking centre. All kuchkabalob were ruled by a single town and ruler. Further, the kuchkabalob may not have had a contiguous territory.

Tzukub has by Okoshi been interpreted as a territorial division of the kuchkabal, such as individual towns that were subjected to a ruler. ***Tzukub te*** ("grove of trees") is connected to toponyms and Ringle and Bey (2001:270) believes it refers to a capital that is metaphorically seen as a world tree.

Roys' model, and various reworkings of it, is believed to be more credible for analysing Postclassic and sometimes even earlier periods. This is because he focused on a tax list from 1549, before the settlements were congregated into 26 towns with Spanish patterns (Rice 2004:27). Coe (1965) employed this model in archaeology. He claims that communities had four wards that were associated with a cardinal direction and ranked offices that were outlined from a centre. Both ritual and political duties rotated among these wards for four years. Carrasco (2000) has also used Roys' kuchkabal model for Calakmul. Rice (2004) has also used this model but with modifications. I

choose not to follow this model since it might not be relevant to other areas and periods.

The household

Located near and far from causeways are smaller structures usually seen as households. A household is a unit of socioeconomic organization rather than kinship. The organization of households is a dominant topic in Mayanist studies. Therefore households can not be neglected, even in a causeway study, especially since recent household studies have focused on the active lives of "commoners" which were not passive in relation to an elite (Robin 2003:320).

Wilk and Ashmore (1988) began to focus on households as being fundamental socioeconomic groups in the Maya area. Up to the mid 1990s, the focus was set on social actors within households, their practices, and how these affected the interaction within the household. Researchers focusing on gender have emphasized how domestic and public spheres within the households were the result of particular historical reasons (Robin 2003:311). It is common to use both general and historical analogies in these studies (Lyman and O'Brien 2001).

In Postclassic Yucatec towns, such as Maní, the centre was surrounded by residential wards, often four in numbers, which consisted of residential units called *nalil* (Marcus 1993:125-133). These consisted of one or several *na*, the individual household compound(s) (Forrest 1997:70). The family head of a household was called *aj otochnal*. These were responsible for the supply of the political economy and contacts with people outside the household (McAnany and Plank 2001:88-90). However, these historical sources are not reliable for other regions or periods. They are even problematic for contemporaneous nearby places since there most likely existed different organizations at the same time.

It is generally agreed that the number of dwellings in a Prehispanic household reflects extended families of related men with wives, unmarried daughters and some un-related individuals (McAnany 1995:106). Restall (1997:100-106) argues that an extended family consisted of 6-12 members in the 16th century Yucatan. These often lived in a *solar* (house lot) with two buildings. Larger households would have included people who did not have access to land and water (McAnany 1993:78).

There are some kinds of "roads" which may have reflected a boundary maintenance aspect between households at a site. For example, the causeways at Chunchucmil are joined by *callejuelas* which are wide streets between *albarrada*s (stone walls without mortar) (Dahlin 2000; Hutson, et al. 2004). These albarradas encircle households and their lots and are believed to have formed the basic social units. Killion's (1992) house lot model includes space outside the domestic houses, such as gardens and storage facilities (Johnston and Gonlin 1998:161). Robin (1999; 2003) has defined the exterior spaces and activity areas by using soil chemistry and paleoethnobotany.

Families may have had more than one residence. They could probably move within the village. Ethnographic data has been used to show that when population increases and agriculture becomes more intensified, households generally become stable. It is when the extended household group becomes property-holding that they begin to elaborate their houses. Households also tend to become more differentiated and the houses become symbols of social differentiation (Wilk and Wilhite 1991:119).

The cost of maintaining masonry architecture is low in relation to simpler houses. Thus, the variations in domestic structure size or construction materials are not necessary caused by status or power. The fluctuation in the domestic cycle, such as increasing or decreasing family size will also have an impact on house size (Abrams 1994:79). Households develop and change. Therefore, they will have different size, organization and composition (Johnston and Gonlin 1998:163). In the hinterland of Xunantunich and other sites in the Upper Belize River valley, many house mounds are isolated and this may indicate developmental cycling (Ford 1990; Yaeger and Robin 2004). Solitary mounds are believed to be the remains of developmentally young and nuclear-family households.

Larger multi-mound groups are interpreted as older households with extended families (Ashmore, et al. 2004:309).

Some of the single and isolated structures may not have been dwellings. They could just as well have been temporary field huts. However, there was no room for far-field huts during the Classic period. Far-field agriculture is a sign of increased population or political instability according to McAnany (1995:74).

The two-level model - commoners and elites

Mayanists usually distinguish the inhabitants of the households as either commoners or elites. These are often treated as dichotomies. The term elite is not easily defined and neither is the term "commoner", despite recent attempts to upgrade them in importance (Lohse and Valdez 2004a:1-3). While doing so, the dichotomy between elite and commoner is still maintained, a dichotomy that can never be as absolute as it appears in the following descriptions.

Some Mayanists argue that elites and commoners had inherently significant differences in rank, role, and profession. Ethnohistorical records have been used to indicate that the Postclassic Yucatec social formations consisted of two endogamous social strata or classes. The upper stratum contained the ruler, his or her family, and the hereditary nobility (*almehenob*). The lower stratum contained commoners and slaves (*mazehualob*) (Marcus 2004). Commoners are believed to have been born out of earth and not from the heavens as the nobles were (ibid:260).

The idea of two social strata is a continuous theme in Mayanist literature, and it is projected backwards from the contact period, to the Middle Formative. These models are mainly based on ethnohistorical accounts, epigraphy and cross cultural analogies. The two-level model has sometimes been used to see the Prehispanic social formations as feudal (Adams and Jones 1981). Another model based on the assumed two strata is the segmentary state model inspired by African models. In this model the segmentary lineage was a landholding unit of kinsmen who had various degrees of autonomy at certain levels (Fox 1987:15). Lineages could also create larger alliances to achieve certain goals and later dissolve into minor units again (Carlsen 1997:74).

How the households were related to different facets of a social world has great implications for many different aspects of Mayanist research. If commoner organization existed only at the household level and there were no kin connections with higher ranking elites, most commoners are believed to have been clients to elite families and must therefore have been relatively powerless. This would have resulted in a mobility of people to attach to other groups since they had no corporate organization from where they came. However, if they were organized into large landholding corporate lineages with blood relationships with the elite, they would have created political factions (Webster 2000:88). It is likely that there were different versions of these organizations throughout the Maya area.

One way to find out the connection between "commoners" and "elites" has been advanced by Inomata who has studied the mobility of commoners at Aguateca and Dos Pilas. It is believed that the elite needed a way to attract commoners that otherwise were highly mobile. Servants and slaves probably had no other opportunity than to follow the elite when war hit the two sites. Others who might have followed the elite, maybe did so because of social and emotional ties. A large number of commoners remained in Dos Pilas after the site had been destroyed by an external enemy. Therefore, some of the commoners did not follow the elite to Aguateca (Inomata 2004:186-188). However, could not these squatters have been slightly later settlers, un-attached to the former commoners? At least they did not respect the temples and palaces. Inomata (2004:189) believes there was a different scenario at Aguateca. Archaeologists found several usable objects in the burned structures of the epicentre, indicating that they were not scavenged by others. This could indicate that people did not or were not allowed to resettle. The conclusion is that commoners probably followed the elite. To me, the connection between elite and commoner is still unresolved.

There are too many ifs, particularly since commoners and elites are treated as homogenous groups. Even if we find evidence of mobility, this mobility could have other reasons than the ones Webster and Inomata assume.

Wealth and achievement are sometimes believed to have provided social mobility. Models based on archaeological material are believed to indicate that there may have been a middle class during the Classic period (Chase 1992:30-32). However, Marcus stresses that there was no third endogamous stratum of a middle class (Marcus 1992:225). Instead, the boundary between these two classes was more fluid than what appears, at least at the lower and upper tier of these groups (Restall 1997:88-92). It is quite obvious that it is the researcher who believes this distinction was important, only because it is mentioned in the texts. However, there were most likely other distinctions that cross cut the "classes". To see a social formation as consisting of two or three classes creates static categories that may have had little impact on the majority of past people.

From the perspective of the status or class-based models, the causeways could likely be interpreted from a social hierarchical perspective. For example, some roads that were maintained by the Aztecs became symbols of the rulers. *Oquetzalli* was a "new road" that was kept clean and smooth in comparison to other roads. It was a privilege for the rulers to travel on this road and good roads were therefore associated with the rights and privileges of the elite (Hirth 1991:212-214). During the Colonial period, commoners in the Maya area were *peónes* (people travelling by feet/workers) as compared to the gentlemen (*caballeros*) who travelled on horses (*caballos*) (Forrest 1997:209). Thus, the means and mode of transportation may have been related to status or "class" as it was of other places and periods. Shorter causeways may have been particularly sacred and thus restricted in access. When the early Spaniards came to the Maya area, people tried to stop them from crossing a causeway, whereas the crossing of unpaved streets was unproblematic (Freidel and Sabloff 1984:83).

Therefore, a causeway could have been an obstacle for "commoners" or others not allowed to travel on or to cross the causeway. In some cases, roads could create certain limits and barrios within a site (Normark 2004c). However, in Caracol, there seems to have been access to the roads (Chase and Chase 2001a). The causeway between Ichmul and Xquerol has possible steps for access along its course (Flores and Normark 2004a). Still, the causeway may have been raised in order for the people performing a ritual circuit to be set on a stage above people watching the spectacle from a lower level.

Economics in the two-level model

Mayanists have focused on the elites and their political and economical importance. The Classic period elite is often seen as having a commercial role where they formed lineage-based economic cartels. They are believed to have overseen production (McAnany 1993; Rice 1987). However, Masson and Peraza (2004:201) believe that the elite may have controlled gateways to distribution but maybe not the production itself.

It is often assumed that exchange networks were created by elites for sustaining their power and to enhance status. Long-distance trade was rather for foreign relations than for basic supplies. In some economic models, the rulers financed themselves through long-distance trade so they could strengthen their local power. Other versions see the ruler as a person monopolizing certain goods. It is argued that the power and wealth of elites was concentrated and enhanced through manipulation of small, lightweight items manufactured from exotic materials and non-utilitarian goods such as polychrome ceramics, eccentrics, jade and quetzal feathers (Brumfiel and Earle 1987:1-3; McAnany 1993:67). These models often assume that the main function of the commodities was to proclaim status. Another assumption is that rank and status were created by wealth and that resources and wealth were only used to create social networks (Hirth 1992:20-23).

However, the belief that the social formations in the Maya area were strictly hierarchical

is probably the result of studies emphasizing the site-centre. There might have been other social formations, particularly among the commoners (Lohse 2004:136). The artefacts of the commoners, such as *manos*, *metates* (called *pilas* if they are worn out and can collect water), waste flakes and storage jars, are similar throughout the Maya area. This has led to a belief that they were conservative (Marcus 2004:263). However, commoners are currently seen as people who adapted themselves to pressures of various sort, such as transforming the environment for producing food and other goods. It is believed that most food procuring strategies were controlled by the commoners (Lohse and Valdez 2004b:3, 8).

Thus, there was a greater integration of utilitarian economies in the hinterland and the centre than usually has been acknowledged (Masson and Freidel 2002; Sheets 2000). It is likely that this integration used informal routes in most cases. Utilitarian vessels for larger Classic period sites like Palenque and Tikal were produced in hinterland communities (Ball 1993:244). These areas were agriculturally marginal and pottery production was a supplemental activity (Marcus 1983a:477; Rands and Bishop 1980). Some Mayanists argue for a fairly autonomous countryside (Masson and Peraza 2004:200) and local exchange was therefore more important for survival, economic stability and the development of states than trade in exotics (Graham 1987:762; Marcus 1983a:479). Centres of intensive production were often not the same as political centres (McAnany 1989:363). Grassroots specialization may have been a response to political boundaries and not the result of a centralized social formation. The economic integration of the Lowlands may have been through horizontal mechanisms rather than vertical mechanisms according to Blanton and others (1994).

Lineage - descent

Whether or not a two-level model or a multiple-level model of social strata is used, the lineage is still the main kinship unit in Mayanist literature. Although the study of kinship has been largely abandoned in social anthropology, especially after Schneider (1965, 1984) criticized the problems of descent (lineage) and alliance (house-society) in the kinship models, it still is a popular theme in Maya studies (see Watanabe 2004 for a critique of Mayanist models). Ethnohistory, Colonial period sources and ethnography are used in trying to outline various social organizations of the Prehispanic past and therefore, these models are static and over-simplified. For example, Restall (1997) argues that during the Colonial period, individuals and families were born into a lineage (*chibal*) and community (*kah*). A person's position in the kah depended on the lineage identity which was tied to land wealth (Dunning 2004:107). Such ideas are then projected into the less well known past. This is a common method in Mayanist studies since these often rely on direct historical analogies. When it comes to older periods, kinship relationships can only sometimes be confirmed through epigraphic material, but these only concern the elite stratum (Dunning 2004:97; Marcus 1992).

What characterises a lineage? It is often seen as a unilineal descent group that owns agricultural land and other corporately owned resources which the members derive benefits from. The property is inherited within the lineage. They practice exogamous marriage, are internally ranked and reckon descent unilineally from one ancestor (Hageman 2004:64). Hageman (2004:70) argues that lineages are associated with resource scarcity and political instability, particularly in the rural areas.

According to McAnany it was the lineage who owned the land but their interests were often in conflict with other lineages and especially the highest ranked lineage, the royal dynasty. Founders of a dynasty claimed to be the first to settle at sites. *Yax chibal wai ti luum*, "first founding lineage of the land", is assumed to reflect the very idea of land rights in the Yucatec area. Land close to houses was also close to the ancestral tombs. The largest Classic period buildings were the ones built on older, Late Formative buildings, manifesting an ancestral connection (McAnany 1995:65, 97). It was common to re-settle formerly occupied land. The remains of these old inhabitants were usually transformed into ancestors or into "pre-sunrise beings" (Hamann 2002).

There are many assumptions based on the lineage's place in the grander social organization. For example, Sanders (1989:102) proposes a four-tiered organizational doctrine for Copan. This relates to a segmentary state that was symbolically centralized. The real power of the ruler was circumscribed by the power of nobles that had other resources. The four tiers were: (1) extended family households which were the smallest social, economic and political units; (2) these households were in their turn incorporated into lineages of different sizes and histories; (3) the lineage heads represented these lineages and served their respective unit; (4) the king represented the head of the highest ranking lineage and was the head of the polity.

Sanders' model was originally supported by indications, from obsidian hydration dating, that Copan was slowly abandoned over a period of four hundred years. In this model it is argued that the ties holding the lineage organization together were stronger than those who held the polity together. This has been questioned by later research at Copan that dismisses the obsidian hydration dating. This research sees a far more rapid decline (Manahan 2004:109).

Since one Colonial period road term is *chibal be* ("lineage road"), could the Prehispanic causeways have linked different lineages with each others or to a centre? Yes and no. Causeways were at least physical reminders of the relationships between people occupying different connected points (Shaw 2001g:266), but these may not have been lineages. Intersite causeways may have been related to kinship links, such as marriage ties (Kurjack 1977). Causeways may at least indicate kinship and alliances between corporate groups. An example of this would be Causeway 7 at Chichen Itza which connects the Temples of the One, Three, and Four Lintels, the Temple of the Initial Series and the Monjas. The inscriptions at these places mention related people (Krochock 1988).

Viel argues, based on iconographical representations of pectorals, that the kings of Copan came from different lineages which also lived in separate parts of the site and the valley. Copan has two residential wards, Las Sepulturas and El Bosque, that are connected to the Main Group by causeways. These wards have different settlement patterns which may be the result of different lineages (Viel 1999:378). In Viel's model, the "B-lineage" leaders, such as *Waxaklajuun Ubah K'awiil* would have come from Las Sepulturas. His accession stela (J) stands at the end of the causeway which leads to Las Sepulturas (ibid:393-395).

However, Ringle and Bey (2001:280) do not see the areas connected by causeways as a link between ruler and other nobles, or between two kinship groups. The causeways are seen as connecting "court" houses with outlying temples that belong to the same elite family. Causeways were primarily political axes where segments were linked to the centre. Had the causeways primarily had a kinship association, the peripheral sites would have been connected with each other and not only with the centre (Ringle 1999:207). However, it is possible that the peripheral sites were connected by informal routes. The causeways may have had other functions. Still, kinship and particularly the lineage may not necessarily have been the main organizational principle throughout the area and through time.

House society - alliance

In recent years it has been acknowledged that a larger household included people not related by blood to the ancestors. Names and wealth seldom followed kinship principles. This has led Gillespie (2000) to question the lineage model. She argues for a house model, originally developed by Lévi-Strauss (1982:174), where the material manifestation of the house, its property and its inhabitants is thought to better characterize Prehispanic social formations in the Maya area. The house consists of a corporate group controlling an estate which is inherited along real or imagined kinship or affinal lines. This model characterizes residential groups as descent groups, and it includes ancestor veneration like the lineage model. According to Gillespie, house members used real and fictive kinship relations to legitimize unity and perpetuity (2000:468).

Since the larger households most likely did absorb some of the not so successful people in a social formation to be included in the access to arable land, social ties were created by adopting ancestors or use fictive kinship terms (McAnany 1993:78). Hutson and others (2004) argue that to determine the succession of social groups, practical kinship may be as important as official kinship. Strategic practices based in symbolism or materiality may be more important than to cite descent rules.

Although Houston and McAnany (2003) agree that the model of house societies can be useful in Maya studies, they think that Gillespie's use of it is too reductionist and narrow. Although there is glyphic and ethnohistorical evidence that the royalty sometimes was referred to as "houses" (Inomata and Houston 2001:210), such as at Tamarindito where the parents of one ruler came from different houses (Houston 1998:521), Plank (2003:577) does not find any textual support for a "house society".

The house society model may better explain the "commoners", where the house seems to be a long-term entity for people's identities. For example, Chase and Chase (2004a:141) argue that if there existed a true form of ancestor veneration at Caracol, it must have been the residential group, rather than a lineage that was the focus for this veneration since there were too many mortuary structures in the residential groups. Differences in protein and maize consumption between neighbouring households suggest that they may not have been related in terms of kinship (ibid:142). Thus, the extended network of causeways at Caracol would better fit a house-society than a lineage-based social formation.

Royalty, elites, and factional competition

As already mentioned, the terms royalty and elites are commonly used in Mayanist literature. I will look at these loosely defined social categories as they are of major concern to Mayanist studies in general and also to causeway studies. Chase and Chase (1992:3) describe the elite as those who run the institutions within a social formation. Archaeologically then, elites are usually seen as those controlling and regulating production and distribution. This is in contrast to Lewellen's definition of elitism which is a bit more complex:

> "Elitism derives not from wealth or specific social functions, but from a vast and complex body of symbols including manners, styles of dress, accent, recreational activities, rituals, ceremonies, and a host of other traits. Skills and abilities which can be taught are conscious, while that great body of symbols that form true elitism are, by and large unconscious. Such symbols must serve a dual purpose: they must be at once particularistic, serving to unite the group and maintain its unique identity, and universalistic, legitimizing it as an agency of power to the great majority of outsiders" (Lewellen 1983:112).

Needless to say, the archaeological record can only partially show this complexity. Archaeologically speaking, elitism is usually reduced to the access of luxury and exotic goods, possession of more elaborated residences, and to be the people that show less evidence of malnutrition (Lohse and Valdez 2004b:2). In the Maya area, polychrome pottery during the Classic period is often thought to have been goods of an elite. The range structures in Classic period architecture have been interpreted as royal or noble households. These would have had several buildings such as storehouses, kitchens, servants' quarters, and private shrines (Haviland and Moholy-Nagy 1992:52). At small centres, such as Aguateca, elite residential structures are often found nearby the royal compounds. Some of the larger sites have a clear spatial boundary between supposedly elite structures and other buildings, such as a higher elevation (Inomata 2001:48). Burial data from tombs that supposedly indicate elites include; jade items, spondylus shells, stingray spines and red pigment which covered the body and

other objects (Haviland and Moholy-Nagy 1992:51-53). Skull deformation and dental modification have also been thought to represent an elite status (Chase and Chase 1992:4-6). However, research by Tiesler (1999) suggests that a broader portion of the population performed these modifications of the human body. For example, Burial 2 at Ichmul contained a woman with modified teeth, but her burial lacked any grave goods. She might not have belonged to an elite, despite the central location of her burial (Kaeding and Flores 2005).

As one might expect, archaeological data do not follow clearly defined categories. Powis (2004:66) suggests that polychrome ceramics were not only restricted to the elite since it has been found in what is believed to be commoner households. Therefore, Powis questions the criteria that archaeologists have used for distinguishing elite pottery from that of commoners; such as superior quality, relative density of whole vessels, design and technique, variation of types, esoteric form of ceramics and other pottery forms that are believed to indicate contemporary wealth and status (Powis 2004:55).

Kowalewski and others (1992:263) argue that the private behaviour of elites is different to their public behaviour. The use of exotics, such as jade, may reflect a private behaviour and not necessarily a public display. There is usually an assumption that monuments that depict rulers wearing jade, such as stelae, were public monuments, but in fact, we do not know if commoners had access to plazas where these stelae are found, even if large plazas appear to have been "public" to us. The only criterion for one to claim that plazas were public seems to be that large open plazas could hold more people than smaller plazas, and therefore they did.

Thus, the elite as a phenomenon is not easy to determine in the archaeological record. Many aspects of being elite simply are not detectable in the data archaeologists study. Since the archaeological data usually does not indicate who controlled the institutions we cannot identify the elite very well. Social processes which the elite may not have been able to control are usually neglected (Kowalewski, et al. 1992:260).

Nevertheless, as mentioned, Mayanists continue to make a clear distinction between elites and commoners as two classes, even among those who wish to give the commoners a greater freedom (Lohse and Valdez 2004a). In all these studies, class itself is seldom defined.

The focus on conflicts within classes and on alliances between classes led to the emergence of factional competition models in the 1990s. In these models, faction leaders are believed to have come from the same social backgrounds since people at the same social level more often were in competition and alliances with each other. Marriage, circulation of ritual- and political activities and patron-client relationships led to the unification of the ruling stratum, but at the same time laid the foundation for conflicts (Brumfiel 1994:3-10). All factions had goals and strategies for maximizing profit and they were only created to gain these resources. The reason why people joined ambitious individuals was not by force but for their own benefit (Clark and Blake 1994:17-21).

In a similar competitive, economic and rational vein, Rathje (2002) has proposed a model in which nouveaux elites competed with each other through *potlatches* (a form of conspicuous consumption). Labour forces and resources were drawn away from other competing groups until one group came to dominate. This is believed to explain why some Late Formative buildings were of massive scale. However, Late Formative monuments do not seem to follow a "cult" of individual rulers, according to Ringle, who believes that monumental construction expressed communal life during the Late Formative (Ringle 1999:187). Instead, Ringle argues that the monumental construction began as a regional competition between regional "cults" rather than being the expansion of the egos of local elite (ibid:213).

Competition among factions or "cults" controlled by elites, are believed to relate to causeways. Lecount discusses two types of feasting activities, those between rival elites and those who promote community consolidation. The latter is believed to have been held in the Terminal Classic monumental centre of Xunantunich and the first one was held in a sub-group (Group D),

connected to the monumental centre by Sacbe 1. This may have been the home of a nonroyal elite group. There are two uncarved stelae, one in front of an assumed ancestor shrine and one at the terminus of the causeway (Lecount 1999:244).

As a contrast to the competitive models, Joyce argues that it was not aggrandizers who violated egalitarian social formations to force others in a self-serving behaviour. She argues that it was social groups in small scale social formations that made the initial large constructions during the Middle Formative (Joyce 2004:17).

It is clear that the focus on elite competition and conflicts neglects most aspects of everyday life since the emphasis is on "activities" aiming for the enhancement of status or wealth. Conflicts, and in some cases warfare, are understood as one of the main dynamics for change in a social formation (Normark in preparation). However, conflicts between various non-institutional groups in a social formation are also neglected as archaeologists believe that the competitive units usually were composed of lineages or classes of some sort. The possibility of other social organizational aspects tends to be overlooked.

Government – the royal court

The royal courts included the ruler and the organization which derived from his or her existence. This court consisted of family members, lesser nobles and their families, advisers, scribes, scholars, physicians, religious specialists, entertainers, craftspeople, retainers, guards and other military personnel, visiting dignitaries and ambassadors, assistants, dependents, guests, hangers-on, servants, prisoners and political hostages (Webster 2001:131).

From the viewpoint of the royalty, the court may have had a centralizing effect even though there may have been factional conflicts within the court. Court factionalism may not have been bad for a ruler since it weakened the nobility. The ruler may have invested in social and political structures which made it difficult for faction leaders to form their own networks of clients. However, noblesse oblige could severely have limited the options rulers had. The costly and theatrical lifestyle may have been an obstacle to efficient rule since this lifestyle may have been more important than administration (Inomata and Houston 2001:12-15).

There are hieroglyphically known royal or elite titles but these do not seem to have defined any specific bureaucratic duties. The spatial distribution of the Maya court suggests a weak bureaucratic development (Inomata 2001:31-34). Webster (2001:135) believes that the king gave specific assignments to hand picked and trusted people in his court. These courtiers had martial, ceremonial, scribal, artistic and diplomatic duties. Not all of the members of the court are believed to have lived and worked in the royal palaces; they may have been active in other locations but were still part of the court. The causeways at Caracol united parts of the royal court with the centre (Chase and Chase 2001a). Further, the court had many servants which indicate that wealth and prestige were distributed to other groups and locations as well (Inomata and Houston 2001:13, 17).

The titles known from hieroglyphic inscriptions mainly come from the Southern Lowlands. Some of the southern terms are found in the Northern Lowlands as well, but most sources used by Mayanists concerning government in the northern area are later ethnohistorical sources, such as Roys (1957), or analogies from the Southern Lowlands. Here I describe some of the titles known from hieroglyphs.

Rice suggests that ***kaloomte'*** was that of the highest rank, a ruler ("emperor") of a large domain, a ***may k'u***, or the seat of a 13 k'atun cycle (Rice 2004:36). The kaloomte title may also have been a religious office with a reference to the ***chaaks*** (the rain gods) (Wren and Nygard 2005:173). If we are to follow the "emperor" interpretation, a kaloomte' was also a very powerful ***k'uhul ajaw*** ("divine king"). Ajaw means "he of the shout" or "shouter". This title seems to have its origin in rhetorical suasion or the ruler may have "spoken for" divine beings (Houston and Stuart 2001:59). The divine

ruler had human qualities but these were usually related to larger cosmic patterns (Houston and Stuart 1996:291). It is likely that the royal symbolism made use of broadly held beliefs (Houston and Cummins 1998). The public images of the court also relied on the presence of charismatic leaders (Inomata and Houston 2001:15). Golden suggests that rulers dedicated buildings when they could, not for showing power or manifesting an ideology, but because it was their duty as kings (Golden 2002:94). The royal title *b'akab*, means either "top of the earth" or "hill-top". It was a title of the person who controlled agricultural terrain and temples (and maybe causeways?) (Houston, et al. 2006).

Some researchers have also relied on iconographic data in trying to see how the various units were held together. Viel (1999) argues that Copan was a diarchy, a kingdom with two rulers from different lineages or houses. These ideas are based on speculations of how iconographic elements related to lineages. Similar dual-kingships may have existed at Tikal (Harrison 1999). However, there are clearer signs of co-rule between some rulers at Caracol. Dual rulership probably only existed during unstable circumstances (Houston 2000:165). In the Northern Lowlands, Stela 7 and 13 at Uxmal depict figures of similar size. It has been argued that they represent some kind of sharing of power (Carmean, et al. 2004:430).

The *sajal* was subordinate to the ajaw. He most likely inherited this status but had to acquire its essence through rituals of enthronement. Sajals are sometimes thought to have been governors of secondary sites but they often appeared at the court. Some individuals may have been an ajaw and a sajal at the same time (Houston and Stuart 2001:61-62). In the Northern Lowlands, the sajal title is known from an accession panel at the small site of Mopila, 12 kilometers west of Yaxuna (Suhler, et al. 2004:470). At Xcalumkin, the title has been suggested to refer to officials of equal rank within a *multepal* which is believed to have been a confederated government (Grube 1994).

There are other titles and offices as well, such as the *aj k'uh'un* title (Jackson and Stuart 2001), but since we do not exactly know what these titles meant I will not discuss them any further. Knowing the titles of rulers and their subordinates alone does not necessarily make it easier to explain how they were organized since the contents of a title may change in time and space.

Other ways of explaining social organization comes from architectural patterns, such as the triadic pattern known from Formative architecture and art and onwards. Quezada (1993) mentions that that there were three individuals that divided the militaristic, religious and political responsibilities in the contact period Yucatan. Laporte and Fialko (1990:45) believe that Tikal's Early Classic rulership had three lineages related to triadic architecture (Rice 2004:268). Lincoln (1994) has discussed the possibility of a triadic kingship at Chichen Itza, partly based on Dumézil's trifunctional hypothesis which has become popular in European Bronze Age studies (Fredell 2003).

Some researchers suggest there existed allegiances that crosscut the political boundaries of the royal court. In trying to explain the political organization at Chichen Itza, Ringle argues for a "cult of Quetzalcoatl" which is seen as "a set of imagery, beliefs, and practices associated with an ideology of leadership" (Ringle 2004:167). The iconographic data would indicate a "state cult" of Quetzalcoatl, associated with militarism, long-distance trade and pilgrimage. Some centres ("*tollans*"), such as Cholula, El Tajín, Xochicalco and Chichen Itza would have been major "cult" centres, thus cross-cutting "ethnic" and political boundaries. Ringle suggests that the reason why the Great Ballcourt at Chichen Itza is so large is that it was used for investiture rituals for rulers wanting to attach themselves to the "cult". It was an arena where leaders were given legitimacy (ibid:170). The investiture rituals were ways to form a loose and extensive political alliance within a religious hegemony. Quetzalcoatl was just one network, but should not be seen as a dynastic patron. The "cult" centres seems to have had a dual rulership, and not a multepal (ibid:213).

It is important to note that it was the ruler and not the architecture that was the focus of the royal court since entire courts could move around. A royal court may have had to move between certain sites to demonstrate its power or to administrate a larger territory which demanded

the presence of the ruler. The mobility could also relate to periodic activities, such as pleasure palaces or participation in major festivals and ceremonies. The need for resources to satisfy the courtly needs and the regeneration of resources may also have induced mobility (Ball and Taschek 2001:169-175). Some sites with extensive causeways could very well have distributed the court to various locations used during different seasons of the year.

The multepal and the council

The multepal has been treated as a geo-political organization described in historical documents believed to relate to the Postclassic centre of Mayapan. Multepal means joint kingship or confederated government (Quezada 1993:28). The multepal is believed to have consisted of a council with members of social groups represented. Mayapan is said to have had four major divisions inhabited by endogamous social groups. The central ceremonial architecture of Mayapan indicates a quadripartition but it is not directly reflected in residential areas. However, textual sources claim that there were six lords associated with the cardinal directions and the centre at Mayapan. The council ruled the city, the jalach winik was the highest ruler and the *aj k'in* was the high priest (Pugh 2003:943-945).

A multepal model has also been proposed for Chichen Itza (Krochock 1988). Kristan-Graham (2001:352) believes that the characteristics of the house-society apply to the multepal. According to this idea, processions that moved from the periphery into the centre, along the causeways, simulated the centrifugal multepal system at Chichen Itza.

The Terminal Classic Puuc site of Xcalumkin may have had a multepal according to Grube (1994). This argument is mainly based upon the lack of truly monumental architecture at the site. There are only midsized compounds. Some of these have hieroglyphic inscriptions mentioning sajals, lords believed to have had similar rank.

Thus, the evidence for a shared rulership would have been the lack of a paramount ruler in the iconography (Ringle 2004:167). The idea of the multepal is therefore partly based upon the belief that the presence of more people in iconography, and the lack of one paramount ruler, indicate that the later Chichen Itza was governed by a council. This would have explained Chichen Itza's need for architecture that could include more people, such as colonnaded halls. However, Houston and others (2000) have argued that "individuals" mentioned in the texts at Chichen Itza, are deities and not representations of a multepal.

Ringle believes that even the multepal at Mayapan is questionable as the earliest textual sources speak of a monarchy (Ringle 2004:168). In fact, the mention of the multepal comes from late 18th and early 19th century sources and it does not appear in any 16th century sources. Mayapan was under the authority of one paramount leader from one of two factions (Ringle and Bey 2001:273). Ringle and Bey (2001:274) do not see the multepal as a joint rule, but rather as a court consisting of important vassals that still had holdings and rights.

It is generally assumed that there existed council houses at various sites, even if they were not related to a multepal organization. Fash (1991:131) has proposed a council house, or *popol nah* ("mat house"), for Copan. Kristan-Graham (2001:335) suggests that the Temple of the Warriors complex at Chichen Itza was such a structure and that it related to a multepal organization. Kowalski (2003:234) suggests that the Monjas at Chichen Itza was a popol nah structure. Kowalski (2003:211) argues that the long Structure 44 at Dzibilchaltun may have been a popol nah.

At San Andres, one of Ichmul's termini sites, there is a large structure (S1E1-8) which has two columns in a patio that probably upheld a roof that created a large interior space (15 x 7 meters). It could potentially have been an area for assemblage similar to a council. One problem with this hypothesis is that San Andres is in the periphery of the causeway system of Ichmul. The site centre of Ichmul shows no similar traces, but most of central Ichmul is covered up by later Colonial constructions. Another explanation would be that the major volume of the Central Acropolis is of

Early Classic date and thus formed and directed the layout of Terminal Classic architecture, which may have had another political organization than what an Early Classic layout suggests (Flores and Normark 2005b:92-93). The columned patio may also be older than the causeway, reflecting a local "council" that was later integrated with Ichmul.

Community

Canuto and Yaeger (2000) see communities as midlevel entities between household and "society". Community usually implies that the members share understandings that are formed in daily practice (Ashmore, et al. 2004:311). There are many different terms of communities in the Yucatec ethnohistoric documents, such as ***pet kah*** (round village/hamlet), ***chanchan kah*** (small village), ***chan kah*** (large village/small town), ***noh kah*** (large town/city) and ***kahkab*** (large town and its associated land) (Robin 2003:332).

A "natural community" is bound by local resources and people that share a common sense of identity due to daily face-to-face contact. Although this is believed to be supported archaeologically, it obscures dynamics within the community and sees the community as static. The "imagined community" focuses on change, interaction, agency and the formation of identity (Davis-Salazar 2003:280). Robin argues that imagined communities linked a larger site with a hinterland (Robin 2003:331). However, the imagined community is a concept originally employed for the rise and maintenance of nationalism (Anderson 1991). The idea of one country, one religion and one language was not relevant in these past social formations. Still, most people probably saw themselves as part of a grander community, but this is probably impossible to investigate.

However, one approach would be ceramic analyzes. Studies of Late Classic ceramic workshops indicate that specialized workshop production was attached to an elite residence in the Southern Lowlands. Ceramics were produced for elites who used them in socio-political contexts over a wide area. These wares are believed to have been used as social currency in gift exchange and in feasting activities (Reents-Budet, et al. 2000:101-118). Feasts could have forged intra-settlement bonds and made people's local identities explicit within the community (Ashmore, et al. 2004:311). Contact period festivals in Yucatan included gift exchange, sacred food to the deities, feasting and drinking (Tozzer 1966:151-169). Political negotiations and tribute were handled during such competitive feasts (Lecount 1999:241).

Joyce and Hendon (2000) use Connerton's (1989) ideas of inscription, to explain how residents among different settlements constructed and used non-domestic architecture, such as ballcourts, and maybe causeways, to manifest affiliations within a community. Highly visible performances for a larger population would have been normative and created a community through the sharing of the same experience (Bachand, et al. 2003:240). Such performances could have occurred during feasts.

The stelae surrounding Copan may have been the result of institutionalized boundary maintenance of the larger community. Other boundaries may have been less clear, but the kings were probably involved in rituals where property boundaries were marked off (McAnany 1995:87). Not just causeways, but roads or informal paths may also have been critical in this sense. *Incensarios* in deposits in front of pyramids may be expressions of such territorial processions. The hieroglyphic stairway at Seibal indicates that Ruler 4 of Dos Pilas (***K'awiil Chan K'inich***) went through a ritual route to establish boundaries by performing a ritual at Seibal and two days later at Tamarindito (McAnany 1995:88-90).

Contemporary people in Maní use different metaphors for alternative models for community construction. The centre is one of the primary metonyms. Various groups have tried to gain control of the constitution of centre through time (Forrest 1997:9). In Maní, the centre is a cenote. It is likely that such water sources were centralizing features in the Northern Lowlands and defined communities in the past. However, while discussing the importance of water sources in social

organization, researchers have often relied upon ethnographic work in Zinacantan in the Highlands of Chiapas. There, residential units consist of one or several lineages called *snas*. These cluster into water hole groups which in their turn form one of the eleven hamlets (*paraje*), which together with the ceremonial and political centre form Zinacantan. However, these are no strict entities since snas cut across the boundaries of a paraje (Vogt 1969:387). The highest ranking sna need not live closest to the water source (ibid:175). The waterholes are sacred and each have their own myths concerning the way water was found by the ancestors (Scarborough 1998:147).

The lower-levels of the socio-political structure at Copan, such as domestic groups and lineages are believed to have been united by agriculture and higher ranked levels, such as waterhole groups, were united by water (Davis-Salazar 2001:194). Davis-Salazar has focused on community organization and water management around the lagoons of Copan. These less-intensive forms of water management may not have been incorporated in a site-wide water management system. She suggests that the lagoons at Copan were central in defining urban groups since these were tied to the lagoons (Davis-Salazar 2003:275, 293).

Thus, a community consisted of various parts, sometimes associated with a water source. The terms *tzukub* (neighbourhood, possibly a town in a kuchkabal) and *kuchteel* (ward) in the ethnohistorical sources suggest that the categories were prominent for the people after the conquest. Residential wards similar to these may have been depicted in the murals at Chichen Itza (Robin 2003:330). Chase and Chase (2004a) also contend that nucleated urban populations were divided into wards which were composed of differentiated households which indicate social strata. Wards or barrios may have existed at Santa Rita Corozal and Mayapan, based upon caching patterns and the distribution of buildings.

Subdivision of settlements may have been arranged by causeways that split sites into sections, such as wards (Tourtellot 1993:229). This has also been suggested by Fedick and Mathews (2005). Thus, causeways could set up certain limits and barrios within a site, such as between Sacbe 1 and 3 at Yo'okop (Shaw 2002a). The members of these sections may also have taken care, maintained or possibly even constructed their segment of the road. It seems as if a section of a road was swept and cleaned by particular towns, wards or persons. The sweeping of public places was common in the Yucatec area. The sweeping of the road (*mis be*) would have taken place at a definite time of the year (Bolles and Folan 2001:307-309).

Keller (1994) argues that breaks in masonry style in the longer causeway at Xunantunich reflect the joining of road segments which were constructed separately. These persons had different levels of skill or tradition. The road segments may also reflect the organization of work. Folan (1977:40) argues that corveé labour maintained the causeways. Shaw (in preparation-a) argues that this may be similar to the *fagina* system of Yucatan where adult males had to do compulsory work in different public projects (Redfield 1941:176-180; Redfield and Villa Rojas 1962:30; Villas Rojas 1945:75). People could be punished or forced to leave the community if they did not obey the fagina. One of the duties at Chan Kom was to build roads. Shaw (in preparation-a) believes that the unfinished sections of some causeways, such as Sacbe 26 at Coba (Bolles and Folan 2001:307-309), Sacbe 4 at Yo'okop (Shaw 2001d), and the Naranjal-San Cosmé causeway (Reid 1995:127), are indicators of this compulsory labour. She suggests that the construction of causeways unified workers and created a collective identity that could be used to form a territory under one single community or polity, like the fagina did in historical time.

Demography and labour

One ingredient usually used in settlement studies are demographic calculations. This usually concerns the levels of community, polity, state or region. These calculations are usually based on house size estimates, carrying capacity, *chultun* or *aguada* capacity, floor area, room count, bench space, artefact counts and site volume (Gonlin 2004:228; Shaw 1998:90). There are plenty of

problems with identifying house mounds and calculating demography in the Southern Lowlands but in the Northern Lowlands there are usually fewer "hidden house mounds" since the thin soil cover makes even modest structures visible on the surface (Kurjack and Garza 1981). However, there is still the problem of vegetation cover, sediment build up and those structures that used few or no stones at all.

Population increases have either been seen as positive (labour enforcement) or destructive (to ecology). For example, during the late eighth century A.D. there appears to be population increases in the central Peten, Belize and the Puuc area. These increases were irregular but led to increased construction activity which was followed by political disturbances and re-entrenchment. Demarest (2004:119) argues that this increase was the result of incoming refugees from other areas.

However, if we set a general population increase to the side, such as there being more mounds during the Late and Terminal Classic than in earlier times and new settlement in agriculturally poor areas; demographic studies in terms of absolute numbers are highly problematic. The number of inhabitants at the same site may differ between researchers since they use different parameters in their models; some include "invisible platforms", and others include field huts and seasonal occupation. There is a disagreement of how contemporaneous the households were and how many structures that were truly domestic.

Dahlin and others (2005:231) argue that "it has become extremely difficult to confirm archaeologically almost any hypothesis about how urban Maya populations fed themselves". This difficulty has effects on demographic figures and ideas of population pressure and intensification of agriculture. Population pressure does not always initiate intensified agriculture since intensified agriculture has been found in areas with no known population pressure (Antoine, et al. 1982; Pope, et al. 1996). On the other hand, some places with known population pressure lack evidence for intensified agriculture (Dahlin and Dahlin 1994).

The size which has been estimated of the populations has implications for how the social formation is believed to have been organized. This usually ends up in the centralization-decentralization discussion. There are presuppositions on what a centralized social formation consists of and what they need, and vice versa for decentralized social formations, as if there were or are law-like principles. However, I am not convinced that demographic calculations are important in studying the "evolution of states" as is often the case in Mayanist studies. These studies "usually suggest that population increase, the result of increasing birth rates in populations whose available living space is relatively confined, creates pressure leading to centralization of authority and differentiation of power" (Giddens 1984:249). Here, scarcity is the driving force (Grosz 2004).

Partly related to demographic studies are the labour investment analyzes since these relate to the size of possible work forces (Abrams 1994; Arnold and Ford 1980). Abrams (1994) depreciates the assumption that monumental architecture demanded a large labour pool. Energetics is seen as an indicator of how labour resources were distributed in a social formation, but the main shortcoming of the energetic approach is that it is assumed that humans do things in an economical way. People may have invested more work than what was most efficient. It also assumes that all costs are known and that they are calculable. Labour investment analyzes should also be site specific as quality of and access to construction material differed and construction techniques varied. This makes direct comparisons problematic. However, a general volume calculation of causeways at a site could potentially be used for classifications that are site specific.

Site ranking and extent of social formations

Above the level of community or site, we have the Mayanist preoccupation of elaborating upon chiefdoms, polities and states, and particularly upon the size of these and their degree of centralization. Site ranking has been one way to establish a political perspective. Site hierarchy is

one way of ranking the settlements. The evidence of this hierarchy comes mainly from Classic period inscriptions or by counting the number of plazas and structures and the volume of monumental architecture (Lucero 1999:213). The latter approaches are common since most sites lack inscriptions. Here, there is a direct relationship between the size and power. The volumetric and stylistic reassessments of sites and regions that have been used in the Maya area often propose centralized states (Adams and Jackson Adams 2003).

Basically, first order sites were large regional centres with several plazas. Lower order settlements had fewer plazas. A similar way of organizing a regional settlement has been used within the Atlas Arqueológico de Yucatán system. It ranks sites according to following criteria: Rank I sites are urban regional capitals (Chichen Itza). Rank II is reserved for urban centres slightly smaller than I (Ek Balam, Ichmul and Yo'okop). Rank III has formal civic layouts comparable to towns (Sacalaca, Calotmul and Xlapak). Rank IV consists of villages with at least one formal building or non-residential civic structure (the termini sites of Ichmul). Rank V has hamlets, with no formal layout or formal architecture (Nohcacab) (Velázquez, et al. 1988).

These site rankings are usually followed by calculations of the territorial control of the site beyond the site itself. A common way of studying territorial extension of political formations has been the use of *thiessen polygons* (Hammond 1974; Mathews 1985). Such models have marked midpoint distances between larger sites that form a polygon pattern. These models have usually supported a decentralized model since all sites are seen as equal. This makes Tikal, considered to be one of the main centres, one of the smallest political formations (Rice 2004:35). However, Marcus proposes a far more centralized and regional perspective by using similar geometric methods as with the thiessen polygons. According to Marcus' (1993:154) study on an assumed hexagonal lattice surrounding Calakmul, sites are located 30 kilometers apart which is roughly one day's travel. Inomata and Aoyama (1996:292-308) have proposed a central-place model based on market-economy principles for a regional level. They argue that a regular hexagonal distribution of central places is the best way to minimize the costs of travel and transport. The model focuses on the interaction between central places and the local population. They argue that the economic base for centres in the Maya area lay within small spatial units. Transport of bulky commodities and utilitarian items only covered short distances.

A combined thiessen polygon technique and a gravity model has been used by Laporte (2004) for settlement in the southeastern Peten in Guatemala. This area lacks a clearly defined political hierarchy. The gravity model is dependent on the cost of movement and the idea that larger sites attract interaction from larger areas. The relative "weight" of centres determines their spatial limits and this weight is established by using public plazas, functionality, etc. (Ashmore, et al. 1987; Dunning and Kowalski 1994; Laporte 2004). The gravity model has also been combined with epigraphical data to locate the presence of sites and/or polities. This model has been proven useful in the Usumacinta river region which has at least 200 hieroglyphic monuments (Anaya, et al. 2003:179-181).

The discussion concerning the extent of polities usually deals with the Classic period. Central in this discussion are the Emblem glyphs, which are titles associated with kingship and dominion over places. The glyphs sometime include place names. Emblem glyphs are rare in the Northern Lowlands (Ringle, et al. 2004:487). Only three true Emblem glyphs with the k'uhul ajaw title are known from the north. These belong to Dzibilchaltun, Jaina and Ek Balam (Graña-Behrens 2006:105). However, Graña-Behrens argues that Northwest Yucatan might have had other less standardized forms of Emblem glyphs than the traditional ones found in the Southern Lowlands. It is argued that a total of 15 Emblem glyphs are known from the north (ibid:120). It is often assumed that people without the "water group sign" in the Southern Lowlands had inferior status. Graña-Behrens believes that this is the original or archaic formula of the Emblem glyph that originated in the Early Classic and that it relates to a place name or a territory (ibid:106).

Some epigraphers have claimed that the true Emblem glyphs were attributes of independent states (Mathews 1991). Others have claimed that they were indicators of a hierarchical order (Barthel 1968; Marcus 1973, 1976, 1993). Monuments at Copan (A.D. 731) and Seibal (A.D. 889) mention four capitals associated with cardinal directions. Based on this, Barthel (1968) proposed a quadripartite geopolitical model (Rice 2005:49). However, the current consensus is that hierarchies cannot be determined from the Emblem glyphs alone but rely on other information in the inscriptions. One unusual monument that makes the interpretations even more complex is Altar 3 from Altar de los Reyes. It mentions thirteen Emblem glyphs in an arrangement similar to the thirteen Ajaw day signs found on turtle figures from the Postclassic period (Houston, et al. 2006). Grube (2002) believes it represents the ideal number of royal seats in the Maya Lowlands, or if we follow Rice's (2004) may-cycle model, it could maybe refer to the number of may k'u centres at this time.

Therefore, it is still unresolved whether the Emblem glyphs were hierarchical and if they could include other sites with Emblem glyphs within the territory (Graña-Behrens 2006:106). Emblem glyphs do not indicate political independence, not even a political unit. Some nobles carried two different Emblem glyphs which could mean the rulership over two or more centres (Palka 1996:222).

In the north, the archaic formula and the true Emblem glyph are both used as reference to a political territory (Graña-Behrens 2006:107). The lack of the true form of Emblem glyphs and the general lack of stelae in the north could indicate that the northern rulers had a stronger position within the social formation and that they did not need the southern rhetoric. Also, by using an archaic name, the northern royalty may have been more traditional or conservative (ibid:120).

Depending on ones preference of data, the proposed sizes of Classic period political formations range from Sabloff's (1986:113) 120.5 km^2, and Mathews' (1991:29) city states of 2,500 km^2, to Adams and Jones' (1981) regional states that covers 12,000 km^2 for Tikal. Those favouring centralized models argue that capitals would have been 120 kilometers apart, in which half of this distance would have been a marching distance (Hassig 1992). The defendable size of territories would have made it possible for there to be fourteen capitals in the Lowlands (Rice 2004:35). Adams and Jones (1981) propose eight regional states for the Late Classic.

Epigraphic research by Martin and Grube (1995, 2000) indicate that the Late Classic social formations were divided between two alliances, centred at Tikal and at Calakmul respectively. These large sites dominated other sites through vassal relationships, something which led to substantial conflicts during the Classic period. However, we do not know if the great powers looked for clients or if the clients looked for a patron (Houston 2000). Teotihuacan in Central Mexico is also believed to have had some influence on the politics in the Lowlands during the Early Classic (Braswell 2003; Nielsen 2003; Stuart 1999).

Aoyama and others (1999) have tried to establish the extent of political boundaries by studying obsidian distribution. Commodities with a high exchange value, such as obsidian, were differently distributed due to political boundaries, than, for example, domestic chert tools. They argue that the distribution of obsidian at Late Classic sites in Honduras followed political boundaries. A sharp decrease in Ixtepeque obsidian, 60 kilometers from Copan, has been attributed to political factors. This distance is longer than the assumed radius (25 kilometers) of the segmentary polities of the era. It corresponds more with the radius of Adams and Jones' (1981) regional states (50-80 kilometers) (Aoyama, et al. 1999:246-248).

Apart from the Emblem glyphs, iconographic data, volumetric assessments, and obsidian distribution, ceramics have also been used to study the extent of polities and political processes. Utilitarian ceramics seems to have had little elite patronage and relied on a decentralized production. Most non-elite ceramics were distributed within an area of 30-50 kilometers (Fry 1980:10). This is not believed to reflect market forces, but rather a shared tradition. There appears to have been

a lack of trade between these areas, something that may have had a political reason. Fine-paste ceramics appears to have been controlled by a centralized production for a restricted market. The specialized ceramics were also distributed over greater areas than utilitarian wares (Shaw and Johnstone 2006).

Changes in social formations, such as conquest and incorporation of other territories, have been correlated with the spread of diagnostic ceramic types that creates a distinctive ceramic sphere (Fry 2003:85). However, Stanton and Gallareta (2001:239) argue that the spatial distribution of ceramic types is not the same as the boundaries of a political formation. Ceramic production and its distribution do not articulate with political influence. Still, it is often argued that if ceramic styles coincide with architectural styles, economic and political spheres, then it is assumed to be safer to talk about polities as well (Johnstone 2005a). However, this relies on the assumption that we can know the nature of past economic and political spheres as well as delimit them from other social processes. For example, during the Late Classic Period, the regionalization of ceramics increased which is believed to reflect a balkanization of the social formations as well (Ball 1993). This stands in contrast to the assumed homogeneity of Middle Formative ceramics. However, these Middle Formative ceramics also had variation which contradicts earlier assumptions on migrations from the south to the north (Stanton and Ardren 2005). It is often problematic to correlate ceramic distribution with few processes, particularly those of simplistic migration.

Correlations between architecture and caches have also been used. Chase and Chase (2004a:142) argue that the abundance of eastern shrines in southeast Peten and western Belize may indicate this area's linkage with Caracol. Taschek and Ball (1999) suggest, based on monumental caching activities, that the Belize Valley centres, Naranjo and Tikal had at least similar ceremonial practices. This, they argue, contradicts Chase's (1993) statement that Caracol would have taken over and influenced the Belize valley during the Classic period (Taschek and Ball 1999:227). However, the caching activities do not need to follow brief political boundaries. They work along other tendencies. Everything is not connected in their actual states as shall be argued in Section 3.

In some cases, causeways have been used to establish the extent of polities. Kurjack and Andrews (1976) have argued that causeways were a form of boundary maintenance and the roads may therefore have been a response to political or military threats. This would only concern longer intersite causeways. They exemplify this with Izamal and Ichcantiho (Mérida) which could have been rivalling centres. Izamal has a causeway that connects with Ake, about halfway to Ichcantiho. This integrated the importance of the causeway, as did the fortified centres at Ake, Cuca and Muna (Kurjack and Andrews 1976:319). War could have taken place along roads or trails between centres. There is seldom evidence of exactly where the battle(s) took place (Bolles and Folan 2001; Webster 2000:99-100). The Coba-Yaxuna causeway has traces of ramparts of unknown date (Villa Rojas 1934). However, few sites were connected by formal roads, making it logistically more difficult to send an army (Martin 2001b).

Thus, the difficulties and discrepancies in the sets of data among the models of various researchers on the extent and nature of political units in the Maya area is quite evident. Newer models try to deal with earlier shortcomings and try to refine them but not in a fundamental way. The basics are not questioned. Transcendentals are replaced by other transcendentals. As shall become apparent in Section 3, this is because the debate concerns static and solid models or systems taken out of the changing world.

The various models above show a span from small to large territories, something that is the debate of a controversy in Mayanist studies; the centralism vs. decentralism discussion.

Centralism vs. decentralism

The focus on political economy in Maya studies has led to the emergence of two camps. Centralists argue for the royal ability to control critical resources such as agricultural land and water. Decentralists

argue for the royal inability to control these resources. Thus, the issue concerns whether farmers were independent (Ashmore and Wilk 1988; Santley and Hirth 1993) or if there was a centralized control of agriculture (Adams and Culbert 1977:93; Ford 1996; Lohse 2004; Sanders 1977). The most important ecological factor for "state formation" for researchers such as Sanders (1977) and Fedick (1989, 1994, 1995a, 1995b) is that fertile soils are differently distributed throughout the Lowlands. Competition for fertile areas in the region is believed to have led to the rise of the elites. In Adams' feudal model, centres were thought to be political entities run by elites who controlled the agricultural production. However, good soil fertility is not indicative of initial development. Copan, with its fertile environment, had a later development than other sites (Webster 1999).

Researchers search for indicators of centralization or decentralization, sometimes in specific buildings. An example of a proposed indicator of centralism/decentralism is the ballcourt. This shows how problematic it is to attribute materialities with quasi-objects or grander social processes. For some Mesoamericanists, centralized political formations tended not to encourage factional rivalries in politicised competitive games. They argue that it was in decentralized states that the need for alternative means of capital acquisition was pursued. This was in the ballgame. Thus, the ballcourts where constructed to acquire wealth and territory in these models. The frequency of ballcourts would reflect local political conditions (Santley, et al. 1991:15-17). The major problem with this assumption is Chichen Itza which has 13 ballcourts. This may be the result of it being part of Ringle's (2004) "Quetzalcoatl cult" network or of it being a may k'u centre (Rice's 2004). From Santley's model, Chichen Itza would have been highly decentralized, but the extensive causeway system at the site indicates centralization, at least in its immediate neighbourhood (Cobos and Winemiller 2001).

In the debate of centralism vs. decentralism, causeways have a considerable importance, at least for the centralist camp, since the causeways sometime are extended communication networks which cover larger areas. This is particularly so for Caracol (Chase and Chase 1996), Calakmul (Marcus 1993), and Chichen Itza (Cobos and Winemiller 2001). Sites with few and/or shorter causeways are seen as more decentralized sites where kinship or other decentralized organizations were more important than kingship.

Centralists see the causeways as the result of the attachment of the central authority to peripheral settlements. The causeways increased the efficiency of transportation, and drew distant places nearer and places that were not connected became further removed. Causeways were therefore selective in their ties (Hassig 1991:18). Even while Coba's causeway to Yaxuna connected other centres, few villages or ceremonial sites have been found in between (Hirth 1991:218). Thus, from a centralist view, sites outside the domain of the causeway are seen as peripheral and isolated.

Most travelling in the Maya area went along narrow paths, not on causeways, although goods may, for example, have been transported along the causeways at Caracol (Chase and Chase 2001). Causeways could facilitate transport of people and goods across difficult terrain (Bustillos 1964:23). The function of causeways for transport would increase with their length. The roads could also be used during the whole day and the whole year (Folan 1991:224). All these factors would make centralization easier.

However, as Lohse (2004:132-134) points out, there might have been several kinds of social formations throughout a relatively small area. We cannot treat an area as governed by centralization, decentralization or any other simplistic processes. In Lohse's study of settlement in a transect at Dos Hombres in Belize, he finds a corporate group and a micro-community pattern. The first is believed to consist of multifamily groups, maybe lineage-based. The other pattern has a less clear hierarchy and is a dense cluster of residences. This one is believed to be a resource-specialized community that would have exploited a nearby aguada. It is doubtful that these patterns are the result of simple decentralization or centralization processes.

Still, Mayanists tend to be stuck in between these two camps, or they try to see a dynamic

process between them. Although most Mayanists agree upon what the basic unit of social organization was (lineage), there are considerable differences in how researchers believe in what way the lineage was connected to the centralizing power of kingship (Blanton, et al. 1996; Chase and Chase 1996; Fox and Cook 1996; Iannone 2002; McAnany 1995).

Centralism

The idea of a centralized Maya society was already proposed by Morley (1915, 1946) who believed that the Southern Lowlands were united into an "Old Empire" and the Northern Lowlands united in a later "New Empire". However, he never found evidence for warfare that would have created these mega states (Rice 2004:23).

Later models on centralization have taken on an adaptationist perspective where a centralized leadership and economy were responses to environmental diversity of resources. Centralized leadership emerged in areas with resource diversity to facilitate market exchange and the elites may have controlled production or long-distance trade. In such resource procurement models, trade is seen as a means of controlling utilitarian and/or subsistence resources that the whole social formation needed (Hirth 1992).

Although the road systems at Caracol, Calakmul, Coba and Chichen Itza probably reflect centralization in the immediate surroundings of the sites, there does not exist a known regional or interregional road network or at least an extended formal road network. This contradicts an interregional centralization model. The lack of such a road network in the Maya area, similar to the one in the Inca Empire (Hyslop 1984), may indicate that the political formations were unstable creations whose power fluctuated over time. However, there may have been narrow trails, brechas or narrow and thin stone-lined paths crosscutting the political landscape that we cannot detect today.

So, what then does settlement layout reflect on a regional level, beyond the intersite extent of causeways? This would be important in order to explain why we do not find causeways criss-crossing the Maya area. On an interregional level, economic models have most often been used to study the degree of economic integration or the lack of it. Some economic studies in the Maya area have focused on environmental determinism, vertical obligations, or production and exchange within a market economy model based on a commercial perspective where economic forms developed free of political administration (McAnany 1993:67).

In Rathje's utilitarian monopoly model, the Lowlands were thought to be environmentally homogenous and local exchange was not necessary. A cultural core in the Southern Lowlands emerged since it demanded scarce resources which existed in the buffer zone. These resources (salt, obsidian and ground stone) were traded into the core in large volumes for production and distribution by elites that also controlled the export of local products (Phillips and Rathje 1977:103; Rathje, et al. 1978:149). According to Rathje's model, the core area spread the "cultural" influence to areas important for basic resources, that is, the buffer zone. The centralization here is on a very grand scale, not important to most causeway studies.

Santley and Alexander (1996) define three different forms of political economies in such core-periphery systems. The first is the dendritic political economy where commodities flow from the peripheral rural area to the centre. This benefits the centre but the peripheral sites are not under the political control of the centres. In the hegemonic empire, military threat is used to control and extract tribute from the periphery. In the territorial empire, sites in the periphery are occupied. There is currently a discussion whether or not the Central Mexican centre of Teotihuacan was a hegemonic/territorial empire and how extensive its influence was on the Maya area (Braswell 2003; Nielsen 2003). A major problem with centre-periphery models is that the distinction of centre and periphery tends to be seen as enduring over time (Giddens 1984:131). Put another way, the grand core-periphery models are static.

In later and down-scaled centralist models, it is argued that some expanding centres connected outlying smaller centres to their economical and political spheres by constructing causeways. It is believed that a bureaucratic state was responsible for administrating large-scale public works (causeways, terraces, defensive earthworks and water management systems). This responsibility would have included forced relocations of population and higher levels of specialization and control of economy and administration. A centralized social formation would be characterized by: (1) a recognizable economic, political, administrative and ritual differentiation and hierarchy; (2) an endogamous divine ruling stratum and a commoner stratum; (3) a four-tiered settlement hierarchy; (4) at least a three-tiered decision making hierarchy; (5) control of writing system; (6) use of legal force; (7) a non-kin based territorial unit (Iannone 2002:70).

Decentralism

At the other end of the spectrum we have the decentralists. Thompson (1942, 1970) argued for a decentralized and peaceful theocracy which was divided into priests and peasants. The latter lived in small villages around large vacant ceremonial centres (Rice 2004:24). The idea of vacant-towns comes from the Highlands (Tax 1937). However, the vacant towns are the result of the Spanish congregation policy when people were forced to congregate in towns. In the Highlands, the population generally neglected the Spanish demands to settle in the town and people returned to their dispersed settlement only to visit the towns on certain occasions (Rice 2004:30). Thus, the vacant town is a Colonial and modern pattern. The vacant town model has long since been abandoned.

The archaeological evidence supporting a decentralized Maya area, is that the settlement pattern partially was an adaptation to ecological conditions which needed a dispersed settlement in the Lowlands. Dispersion is believed to have obstructed centralization. Another indicator is that utilitarian ceramics seem to have been manufactured in the hinterland surrounding each site. The distribution of ceramics does not indicate the presence of centralized states, but rather decentralized state formations (Blanton, et al. 1994; Rands and Bishop 1980).

A decentralized social formation is believed to include; (1) traces of superfluous economy and rituals; (2) kinship integration; (3) a two- or three tiered settlement hierarchy; (4) a two-tiered decision making hierarchy; (5) use of similar ritual objects; (6) use of ideology in rituals; (7) a focus on ancestor veneration rituals; (8) a loose integration between sites meant that the success of one site may not have affected its neighbour of similar size; (9) provincial capitals with a loose tie to a larger centre would have been replicas of the larger site (the galactic model); (10) a tendency of peripheral centres to shift allegiance; (11) defense as the main reason for integrating larger kin groups (Iannone 2002:69).

For the decentralists, the Maya area is believed to have consisted of several flexible states which often switched alliances (Fox, et al. 1996; Lucero 1999). As mentioned, polities in the Maya area had ranked local communities at several levels. The role of Classic period kings was to be the glue that held the polities together despite the kinship based factionalism (Fox et al. 1996:798-800).

Mayanists who follow a decentralized approach tend to see the polities as small. Peter Mathews (1991) argues, based upon Emblem glyphs, that there existed 40-70 separate kingdoms during the Classic period. This decentralized view argues for unstable kingdoms which were governed by politically unimportant but ritually important rulers. Sanders and Webster (1988:534) argue that the use of royal display at the Classic period centres is evidence of the weakness of centralized rule in the Maya Lowlands. Another way to cope with the competition within decentralized social formations would have been to create new settlements, which the sudden importance of sajals may indicate (Houston and Stuart 2001:74).

There are several versions of decentralized models; the regal-ritual cities (Fox 1977),

segmentary states (Ball and Taschek 1991; Dunham 1990; Fox and Cook 1996; Houston 1993; Mejía, et al. 1998), city-states (Abrams 1994; Grube 2000; Webster 1997), feudal states (Adams and Jones 1981), peer-polities (Freidel 1986; Sabloff 1986), theatre states (Demarest 2000; Geertz 1980), and galactic polities (Demarest 2000; Dunning and Kowalski 1994; Houston 1992; Tambiah 1977). Common in several of these models is the use of ethnographic and ethnohistoric analogies from Colonial and modern groups in the Maya area and in other parts of the world. I shall not describe these in any greater detail.

Causeways as centralizing features

Although roads that link centre and peripheral settlements benefit the centres economically, they need not have been built for economical purposes (Hassig 1991:24). This is not the scenario envisioned for Caracol. Caracol and its extensive causeway system has become important for the centralized view of political and economical structures in the Maya area. The large site was organized as a centralized settlement hierarchy with administrative nodes based on a dendritic transport system (Chase and Chase 1996:886). At least 39 causeways are known and over 75 kilometers of intrasite causeways have been found which range between 3 and 12 meters in width. There may be an additional 85 kilometers of intersite causeways extending from the site (Chase and Chase 2001a:275). The large population, agricultural terraces and the causeways are evidence for state involvement in agricultural management according to Chase and Chase (1996:808). The causeways may have helped to maintain a uniform social identity as they integrated the population (Chase and Chase 2001a:280). Caches have also been used to strengthen this argument at Caracol. Although caches in royal contexts were more elaborate, other plazuela groups show similar pan-Caracol rituals (Chase and Chase 2004a:141).

The causeways that radiate out from the epicentre in all directions end in roughly two rings of termini. The first is 2.7-3.0 kilometers from the epicentre and contains large plazas surrounded by low-range structures with no apparent residential function (Chase and Chase 2001a:276). Spur causeways connect elite households with these termini. Some earlier large households were not connected to this Late Classic causeway system. The second ring of termini lies 4.5-9.5 kilometers from the epicentre. These termini are centres that originally had not been connected by a formal route and remained relatively autonomous and may have been used to serve administrative and social functions. When Caracol grew in the beginning of the Late Classic, the causeway system expanded to these pre-existing sites. These termini lack ritual and domestic items. This fact and the location of these plazas suggest that their primary function were integrative (Chase and Chase 1996:807).

Some of the smaller causeways, which connected termini with elite residences, also connected non-elite residential groups. This may indicate that the roads were utilized by different groups. Therefore, the causeways at Caracol were most likely used on a daily basis rather than having a ritual importance (Chase and Chase 2001a:277). Most residential groups at Caracol were involved in manufacturing items for trade. No specialists were attached to the palaces; such production took place in the outlying plaza groups (Chase and Chase 2004a:144). The causeways were used to distribute these goods in the city (Chase and Chase 2004b:24).

Most epicentral palace compounds at Caracol were used coevally during the Late Classic. The elevated Caana structure which was crowned by three temples and palace structures was used at the same time. At least 13 other palace compounds have been found at the site. These tend to lie at or close to the causeway termini (Chase and Chase 2001b:106, 110, 124).

Tomb distribution shows that the excavated tombs clustered around several causeway termini. This may be the result from sampling but the concentration of tombs at the termini has been used as evidence for centralization (Chase and Chase 2001b:129). Stable isotope analysis shows that high status people ate maize and protein. The people with most similar diet were people living

adjacent to the causeway termini. Furthest from this diet were the people that lived around the epicentre (Chase and Chase 2004a:142). Thus, the skeletal remains found in tombs in epicentral palace complexes indicate that these people ate a similar diet. Most of them did not eat the same food as people at the royal court. However, some individuals at these places shared the diet with those of the centre which may indicate that these persons ate most of their meals at another place, on a regular basis, probably from the royal kitchens (Chase and Chase 2001b:130).

Another commercial site, but with a different and less extensive causeway system is Chunchucmil. Dahlin (2000:285; Dahlin and Ardren 2002) has argued that the 14 causeways at Chunchucmil and the two to four meters wide callejuelas at the site gave access to public areas that were used for market exchange. It is argued that the site was a gateway city and a marketplace since its causeway system made commerce easier. Chunchucmil lacks a focal pyramid or palace complexes. Therefore, the causeways are not believed to have been used for ritual processions (Dahlin and Ardren 2002:270). A possible market place at Chunchucmil has been located from high phosphate values and the remains of market stalls in a large plaza area (Dahlin, et al. 2005).

Coba is a large site with a centralized radial road network, with at least 45 causeways (Con 2002:38). The site has two different causeway systems; the Coba Group and the Nohoch Mul Group. The first one seems to be older and may be of Late Formative date. It has a cruciform pattern, aligned to the cardinal directions. The later pattern is Late Classic and may relate to an expansion of Coba's power, particularly its long causeways to Yaxuna and Ixil (Shaw in preparation-a). Most of Yaxuna's Late Classic investments seem to have been directed to the construction of the causeway to Coba (Shaw 1998:6). Shaw argues that Coba used the causeway to Yaxuna to forcibly include Yaxuna within its polity (ibid:251). The Late Classic Yaxuna Arena Rojo ceramics are not found in great quantity at Coba and there are not many Coba ceramic types at Yaxuna. Thus, there was not a major intersite commerce between these two sites. The causeway was maybe used to transport materials, troops and food to the outpost (Suhler, et al. 2004:459). The Coba-Ixil causeway may have been used to control farmers that would support the people in Coba (Robles 1976).

Another site with an extended road network believed to indicate centralization of power is Chichen Itza. The 69 causeways at the site cover an area of at least 30 km^2. Like Coba, the site has one early and one late causeway system that is believed to represent two different organizations. A decentralized organization is argued to have existed in the older part of the site, up until the ninth century. The earlier causeway system connected temples, altars, range structures, patios and gallery-patio structures. This linear pattern would have been similar to the "beads-on-a-string" pattern at Sayil. The later Chichen Itza went through a period of intensive monumental construction and it is believed to reflect a centrally governed and hierarchically organized social formation. A solar market may have been administered by the government. Large stone quarries along the causeways and evidence for standardization in construction materials suggests centralization (Cobos and Winemiller 2001:288).

In the eastern Puuc area, it is believed that there were several independent, small scale, regal-ritual kingdoms. The exception here is Uxmal that some believe reached centralized statehood during Lord Chaak's reign. Uxmal's regional state is believed to have been rather small or short-lived, for the site's rulers are not mentioned at other sites (Carmean, et al. 2004:442-444). During its brief expansion period, Uxmal constructed a causeway to the already existing causeway between Nohpat and Kabah (ibid:432). Survey along the Uxmal-Nohpat-Kabah causeway shows a continuous settlement between Kabah and Nohpat but not between Nohpat and Uxmal. There are formal entryways (*pilonos*) on the causeway where the entrance or exit to Nohpat and to Uxmal is. These are lacking in the Kabah-Nohpat section. Carrasco (1993) sees a non-formalized interaction between Kabah and Nohpat. The area between Nohpat and Uxmal may reflect the sites' need to define their territorial limits as independent polities. Thus, Uxmal's apparent dominance in this

causeway system may be late and short-lived (Carmean, et al. 2004:433).

Calakmul has at least 15 causeways. This large site has been the main example in Marcus' central place theory in which it is argued that the best way to administer subordinate sites is to keep them equidistantly from each other and from the main centre. Calakmul's subordinate sites were located one day's travel from the main centre, or roughly 30 kilometers (Marcus 2003:93). Some of them were connected to Calakmul by causeways. Calakmul was probably connected to El Mirador by Sacbe 5 which seems to cover the whole distance of 38 kilometers between the sites. The causeway seems to continue another 30 kilometers further to the south to the large site of Tintal (Folan, et al. 2001:294). However, it is more likely that this causeway was older and constructed from El Mirador, another large and centralized centre from the Late Formative.

Tikal, which was one of the largest Late Classic sites in the Maya area, has so far not revealed any extended external network of causeways. However, during recent surveys of the surrounding earthwork, a causeway was found at the northern portion of the earthwork. It may be associated with the earthwork found near the site of Chalpate (Webster, et al. 2005).

Since some larger sites did not have causeways, one might wonder why this was the case. Shaw argues that they may have used other means of connecting; brechas, roads, plazas, walls, albarradas and walkways. Today, small paths are used to connect villages with milpas, beehives, water sources and settlement (Shaw in preparation-a).

However, one could argue that radial causeways also indicate decentralization if they were constructed from the periphery into the centre. This could potentially be the result of a desire to connect with the centre if it had become an important ceremonial place. Such an inward expansion may have benefited various groups at the periphery rather than only the centre.

The "dynamic" models

Some socio-political and economic models have been accused for being static, only reflecting either centralization or decentralization. No social formation emerges fixed, they always become. However, even the proposed "dynamic" socio-political models in the Mayanist model building tradition are static. All models are static since they are representations of a changing world. The "dynamic" models could potentially be used to explain fluctuations in the extent of causeway systems.

In Marcus' model on dynamic states, it is argued that all Mesoamerican states went through similar evolutionary stages. This process began with a rapid growth of a state that acquired territory. This territory was then filled with secondary centres which grew and became independent (Marcus 1993, 1998, 2003:86). In this scenario, Tikal would be primary and the formation of Copan should be seen as secondary. This process finally led to the diminishing of domain and the collapse of centralization (Marcus 1998). However, we cannot define primal states as if they developed isolated (Giddens 1984:252). In the case of Tikal, it was not primary in relation to El Mirador, which in its turn was not primary in relation to Nakbe during the Middle Formative, and so on. The search for the origin, the "mother-culture" or "mother-city", will never succeed, everything has always been preceded by something else (Foucault 1972).

There are several models of the fluctuations of political power. One of these is Gossen and Leventhal's (1993) model based on Redfield's (1960) ideas on the relationship between the Little and the Great Tradition. The Great Tradition was, and still is, short-lived and underwent genealogical adjustments as dynasties rose and fell. The peripheral Little Tradition was, and still is, conservative and stable since it focused on the domestic sphere (Gossen 1999:172-186). This basic model has some similarities with McAnany's (1995) kinship-kingship antagonism. She argues that since kingship tries to control kinship, it does not build on it, but transforms it. The vertical kinship based factions were replaced with horizontal strata which gave the elite greater power (McAnany 1995:143-150). Thus, the long-term process was decentralization which sometimes

became centralized (Iannone 2002:74-76).

In the dual-processual model of Blanton and others (1996), there is a mixture of factional competition models and the core-buffer model of Rathje and others (1978) . The dual-processual model assumes that there existed two types of power strategies (Blanton, et al. 1996:12). The first was the decentralized *network strategy* in which political agents (factions) tried to monopolize the sources of power. Polities were small and autonomous and they linked themselves through warfare and marriage. In this network strategy, manipulation of distant connections created a source of power. The leader manipulated production, exchange and consumption of valuables. These socio-political formations mainly focused on individuals, prestige-goods and wealth. They had a non-corporate organization and they often developed in marginal areas along trade routes (ibid:2-7). Feasting studies suggest that variation in the distribution of prestige goods are traces of past political strategies. Exclusionary strategies, such as diacritical feasting, related to network-based social formations (Lecount 2001:936).

In the second strategy, the centralized *corporate strategy*, power was shared between different groups to inhibit the network strategy. Merchants were controlled and prestige-goods systems were not important. In the group oriented corporate systems, larger polities could develop which often had impressive public buildings and large open spaces for collective rituals which focused on fertility and renewal (Blanton, et al. 1996:4-7).

Within a region, social formations are believed to have shifted between these two strategies. They may have coexisted in a core-periphery relationship and they were often antagonists. A powerful core may have tried to take control and monopolize the network-based social formations in the periphery and reduced the threat these more competitive social formations were. The collapse of a corporate polity may have led to network strategies among the smaller surviving polities (ibid:7).

Iannone (2002) has used Braudel (1972) since he provides a grand theory that supposedly merges generalizations and particularities. This structural model consists of three basic rhythms of duration or *durée* which operate contemporaneously but which are of different wavelengths. Changes come from contradictions and conflicts between structures of certain duration and human behaviour. The three levels of history are: *evenement* (episodic), *moyenne durée* (cyclical) and *longue durée* (structural) (Knapp 1992:10). Group history and the long-term are different from individual history and the short-term. The long-term is determinant and it is more encompassing than the sum of all individual events. Iannone sees the long-term as the gradually changing environment, certain forms of technology or ideology. The moyenne durée is the social history related to demographic, economic and socio-political cycles. Evenements or events are the lowest and least important in Braudel's schema. These include battles, marriages and alliances related to the individual life span (Iannone 2002).

The latest, and certainly not the last, attempt to try to squeeze all data from the Maya area into an all-encompassing macro-perspective "dynamic" model is Prudence Rice's (2004) reworking of Puleston's (1979) and Edmonson's (1979) 13 *k'atun* (*may*) cycle models. She disagrees with earlier models described above as they are based on foreign ethnographic analogies. Rice suggests that what is lacking in the earlier dynamic models is an explanation of how this could go on for generations and on every scale. She believes this constant is found in cosmology and cyclical time (Rice 2004:52). The cycle was seated in a city that became the cycle seat (*may k'u*) for 256 years. It had a temple that housed the cycle and the main plaza (*sak lak tun*) was the crossroads and the centre of the world. The city had a sacred ceiba tree and well (ibid:78). Other towns in the city's realm fought to seat one of the 13 k'atuns in the cycle. This gave political powers for almost 20 years (Rice and Rice 2004:134). After the 256 years, the city and its idols were destroyed, and the ruling dynasty may have left the centre. Rice combines the 256 years with a half may, or 128 years, when the incoming may k'u centre may have been a "guest" of the current may k'u centre. Its power as a may k'u centre would be 384 years, only ten years shorter than a baktun (394 years)

(Rice 2004:84). Thus, for the first 128 years it was a guest, as an incoming may k'u centre, then it ruled sovereign for 128 years to once again co-rule with a new guest for 128 years (ibid:114). Rice (2004:125) argues that there would ideally have been totally 13 k'atun seats within the realm of the may k'u seat. Epigraphic data suggests that Tikal had 13 provinces or possible k'atun seats. Maybe the 13 Emblem glyphs mentioned at Altar de los Reyes (Grube 2002) related to the number of may k'u centres. Causeways at various sites could relate to the may model. This will be discussed in the following chapter on cosmological models.

2.2.3. Cosmological models

Apart from the socio-political and economical perspectives there is a predominant cosmological theme in many causeway studies. These are generally idealized "macro-cosmological" models, which I call the *cosmological entrapment* (Normark in preparation). The cosmological models Mayanists use are seldom based in any theoretical discussion beyond the culture-historical tradition.

Therefore, few Mayanists could be seen as "postprocessualists". In "postprocessual" archaeology there is a shift towards focusing on ancient people's subjective views of their environment where the causeways are located (Bender 1993, 1995; Tilley 1994). This landscape is often entrenched in cosmological metaphors. However, how can we understand past subjectivities by using our own subjectivity? This is clearly impossible. These assumptions are strongest in landscape archaeology which emphasizes that the external space in science has been quantitative and geometric. The processual archaeologists have seen the space from an economic/rational perspective. Space was seen as something abstract where human action took place. Thus, action and space could be analyzed separately from each others. Site maps derive from the scientific tradition that sees space as consisting of a neutral grid of coordinates (Gosden 1994:14).

As a reaction against such views, phenomenology became popular in landscape archaeology during the 1990's. In phenomenology, space is not an external world where we act. We are socialized into a space where human activities are acted out. Space is conceptualized through the use of the body and this also shapes the way we interact with other people (Merleau-Ponty 1962). Human beings are dispersed through experiential space since our spatial understanding is not dependent on the present location of the body (Thomas 1996:86).

Some Mayanists equal phenomenology with cognition. For example, Stone (2005:250) says it is important to "consider certain aspects of phenomenological classification which informed Pre-Hispanic thought and which endure as general operating principles and in specific content (though much of this has obviously changed) in many modern Mesoamerican communities, making them accessible in ethnographic writing". Therefore, she claims that the "Mesoamerican cognized spatial models" best can be understood through static and structural components seen in architecture. The critical problem here is that neither cognition nor architecture is static (Normark in preparation). As will be argued later, Mayanists tend to reduce past people's world view to static cognitive and cosmological models. However, if we would do the same to our own "cosmology" or cognition, it is easy to spot the problems. We are not walking around with static cognitive schemes in our mind. Can we reduce our own "cosmology" (whatever that is) to some static principles that could be explained by the distribution of buildings and objects? If not, why do some researchers believe this can be done with the past people in the Maya area? The less we know, the easier it is to create generalized models.

Another way of viewing the landscape is to see it as inscribed with meaning. Forrest describes the landscape as a process in which people use the environment and its narratives in order to combine the everyday life with cosmology and local history. Here the landscape is a model for a created community as it acts as a medium for metaphors of the past of the community and its place in the world. A landscape never has one meaning since it is bound to material interests of various groups. Forrest argues that human action and narratives form a metaphorical link between daily

activities (foreground actuality) at various locations with background potentiality such as cosmos or time (Forrest 1997:7, 30). The landscape formed by earlier human agents becomes the space where future agents are socialized. Therefore, landscapes are created by patterns of action, a human-made space that later shapes future action (Bender 1993, 1995, 2001).

What has been mentioned above about phenomenology and the inscribed landscape is not often found in most Mayanists' research on the landscape in which the causeways were located. Neither will I intend to follow these approaches. They are subjective and/or part of social constructionism. I wish to return to the "real", but without the positivist view of processualism. My use of Bergsonian and Deleuzian philosophies will follow a different line of thought than that of processualism and postprocessualism. However, let me describe the way the cosmological entrapment has been described by Mayanists. A major ingredient in the cosmological stew is shamanism.

Shamanism and animism

Shamanism has become a popular catch all term used in the Maya area (Brady and Prufer 2005a; Freidel, et al. 1993; Klein, et al. 2002). The idea of shamanism is derived from Eliade (1964), but today it is not seen as a primitive form of symbolic system or religion (Hamayon 1994:76). It is seen as operating on several levels in social formations of various complexities. It is also believed to change (Prufer 2005:190). It seems that shamanism as a concept in Mayanist research has its strongest supporters in cave studies (see the contributions in Brady and Prufer 2005a). See Klein and others (2002) for a materialist critique of shamanism in Mesoamerican studies.

In terms of causeways and shamanism, it could be mentioned that Devereux (1997:123) argues that there is a connection between the many large linear structures in the Americas and the use of hallucinogenic plants in trance ceremonies. The linear features would be symbolic expressions of shamanistic trance conditions and, as such, they create a sacred landscape (ibid:219). Linearity is a pattern experienced during trance states and causeways could potentially have been part of "shamanistic" symbolism (Schwake 2000:11-12).

Animism is often connected with the shamanistic ideas in some Mayanist studies. Animistic forces are found in objects, buildings and natural phenomena (Freidel, et al. 1993). Buildings and objects were alive and born into the social setting (Monaghan 1998). For example, the *och-i k'ahk'* "fire-entering" collocation refers to a ritual that gave buildings a soul (ibid:105). Buildings were not only animate, they were described as named cosmic beings, such as Structure 44 at Yaxchilan, which was the Starry Deer Caiman (Plank 2003:151). This kind of anthropomorphism is when humans impute human attributes to "inanimate" entities (Guthrie 1993). Animism could perhaps be seen from such a view. Boyer (1996:92) notes that an entity, such as materiality, can possess "intentional psychology" without being alive. Thus, social agency is not defined from biological attributes, it is relational, and it depends on a network of social relations according to Gell (1998).

The quadripartite world and the quincunx

It is assumed, as a general principle among several Mayanists, that a quadripartite organization is central in the "Maya culture", from the Middle Formative to present day and all over the area. This is often conflated with the quincunx in which the four quadrants of cosmos derive from a centre. It is generally believed that a long-lasting function of causeways was to delimit sacred space or define the extent of the sacred domain that ultimately relied upon quadripartite/quincunx principles.

The quadripartite principle is argued to be found on all levels of social formations; from caches to altars, tombs, buildings, milpas, plazuelas, plazas, causeways, centres, settlement and regions (Mathews and Garber 2004). Coggins (1980) notes that the quadripartite motif also is symbolic of cyclical completion. Thus, even time itself is attributed with this principle. The k'in sign, the Lamat sign and the zero or "completion" sign are all quartered (Mathews and Garber

2004:49).

Some Middle Formative caches show this pattern. Cival near Holmul had a Middle Formative (600 B.C.) cruciform cache with four-levels that was cut into bedrock. It included five water jars and five upright celts placed in cruciform patterns (Estrada-Belli 2006:59-61). Other caches with a similar quincunx pattern have been found at the Belizean sites of Blackman Eddy and the Late Formative sites of K'axob and Cerros. Some caches may also reflect the layered universe (Mathews and Garber 2004:52).

This quadripartite world is said to have been created when a world tree (*Wakah Chan*), or *axis mundi*, was raised from three hearth stones of creation in the centre of the quadripartite world. This is believed to be exemplified by a wooden post that was stuck into the quadripartite cache at Cival (Estrada-Belli 2006). This world tree has its roots in the Underworld. The creation event separated the heavens from the earth and sea (Freidel, et al. 1993).

Ringle and Bey (2001:270) argue that the Colonial word tzukub te ("grove of trees") meant capital or polity and the political units may have been seen as world trees. Thus, every site would be a cosmos in itself if this explains earlier patterns.

The created world had four horizontal corners and three vertical levels. The corners are believed to have been the cardinal directions or the sunrises and sunsets at the solstices (Milbrath 1999). In contemporary Yucatec villages, the four corner posts of a house are called *ka'an che'* ("sky-tree") (Forrest 1997:74). However, the axis mundi and the east may in some cases be the same. Villa Rojas claims that the Yucatec sees the eastern horizon as the trunk of the sky (Sachse and Christenson 2005:25).

Stanton and Freidel (2005) argues that the word *kan* (number four) is linked to other similar words in the cosmology, such as *kaan* ("cordage", "umbiliculus"), *kan* ("snake"), *ka'an* ("sky") and *k'an* ("yellow, precious") (ibid:237). In short, number four relates to the corners and sides of the world, linked to the sky by umbilical cords/snakes. K'an relates to maize and the Maize god that springs out from the centre of the quincunx or from the east. Many of the gods had four aspects or existed in groups of four. These were associated with colours and cardinal directions (Rice 2004:21).

Some researchers use Middle or Late Formative settlement patterns in order to find the original design principle. The Middle Formative north-south aligned causeways at Yaxuna are believed to have formed a geomantic plan together with east-west buildings, representing the quadripartite Kan cross. It is believed that this Kan cross was reinterpreted and changed by later causeways and other structures. The north-south axis with causeways is seen as Wakah-Chan, which combines the world tree, the Milky Way, the Cosmic Monster and the ruler (Stanton and Freidel 2005:225, 229).

T'isil in the Yalahau region had a short Late Formative occupation. Therefore, the site is believed to reveal principles of site layout, since it was not disturbed by later settlement. The site has a cenote that appears to have been the centre of the community. There is a small causeway on the eastern side that divides the community into two halves. A wall system divides the northern part of the site. It is assumed that this is the remains of a quadripartite division of the site. There is also a concentric zoning of the settlement (Fedick and Mathews 2005:41-43). On much later Colonial maps, large centres had their dependencies connected by line or they were arranged in concentric circles. Large areas were viewed as a circle with quadripartite divisions (Marcus 1993:126-133).

At many sites, structures surround plazas on all four sides. Sometimes there is also a central structure. Baudez (1991) believes that the radial platform in the centre of Copan's Great Plaza was placed in the centre of a Kan cross that divided the Main Group into quadrants, partly by the eastern and western causeway (Rice 2004:177). In a similar way, Pugh suggests that Mayapan's five serpent temples in the central Ch'en Mul group were the cardinal points that formed the site's central ritual place and that they also formed a quincunx (Pugh 2001:247).

The Formative, Classic and Postclassic quadripartite pattern of directions is believed to be

similar to the one attributed to present day people. Hanks (1984:136) argue that all ceremonies by contemporary Yucatec use the directional principle, from altars, to bodily movement, gestures and cosmic directions. Hanks (1990:299-302) also makes a distinction between cardinal directions and cardinal places. The former is fixed by terrestrial and celestial features to which the human agent orients himself or herself. A cardinal place is a schematic totality of zones and they can be seen as mini-universes. Cardinal places are joined by a perimeter which makes it possible to distinguish what is inside or outside.

Although the four world directions are believed to have defined space, their directions were not circumambulatory but they rather went between peripheries to centre which the cruciform causeway system is believed to reflect. The Spanish noticed that Izamal was a centre of pilgrimages and that it had four roads running out to the four cardinal points (Mathews and Garber 2004:55).

Diego de Landa mentioned that the contact period towns in Yucatan had four entrances located at the cardinal directions. People made a hollow clay image of the god of the ***Wayeb*** days (the five last days of the 365 day long year called ***haab***) with an associated colour. Then it was carried to the appropriate entrance and it was placed upon one of the two stone piles at the entrance (Mathews and Garber 2004:55). Until quite recently, the principal entrances of the Yucatec towns had four ***akantun*** or stone shafts that marked the quarters (Roys 1965). Some of these were replaced by crosses during the early Colonial period and they still stand at the side of the roads leading in and out of most towns and villages (Clendinnen 1980:392; Forrest 1997:74). Ichmul has such crosses. Wisdom (1940:421) describes how four roads that lead out of the small Chorti towns in Guatemala also have crosses. They are there to protect the people from evil spirits and apparitions. A supernatural that guards sites is called "guardian of the road or path" (Bassie-Sweet 1996:45; Douglas 1969:71).

However, real directionality may not have followed ideal patterns. In the 1930s, the village of Chan Kom was said to be divided into quadrants by four roads leading inward. The perceived world, village and milpa were seen as squares with the four corners located in the cardinal directions. Wooden crosses were raised at four of the entrances, the corners of the village, and the village centred around a cenote. In reality, there were seven paths that entered the village from no particular cardinal direction (Redfield and Villa Rojas 1962:114).

Crossroads

The crossroads are seen as the centre of cosmos. These roads are connected with a colour and a supernatural (***Chaaks***, ***Balams***, ***B'akabs*** and ***Pahwatuns***). In the Colonial texts, the crossroads are associated with the "four rest stops" or the "four changers" (***kan luub*** or ***kan hel***) (Keller 2001:14). Kan hel is associated with the solstices and equinoxes (Miram and Bricker 1996:401). The kan hel and kan luub are rest stops in the form of platforms where one could place one's burden and sometimes they were ceremonial platforms located at the entrance to a plaza (Edmonson 1982:76-77). Landa reported on heaps of stone raised at the four cardinal entrances to a town where the statue of the god representing the burden of the year was placed during the New Year rituals (Keller 2001:14; Tozzer 1966). The small platforms located at the intersection between causeways and plazas of Ichmul's termini could potentially have been kan luubs.

Bassie-Sweet (1996) suggests that the place where the cardinal roads crossed the perimeter of the quadripartite world, including the four road intersections in the centre, were called crossroads. This was connected to the deity called ***Ix-hol-kan-be*** ("lady opening-at-the-four-crossroads") (Roys 1965). Bassie-Sweet (1996:23) believes these crossroads relate to caves at the peripheral midpoints. There is also a close relationship between crossroads and trees. This could possibly relate to the idea that a tree stands in the centre of the world where the crossroads is. The artificial cave of Esquipulas, which is formed like a cross, has an altar located at this crossroads. This is where the Black Christ of Esquipulas is said to have been found (ibid:43).

One of the few true physical crossroads is the one where the Coba-Yaxuna causeway crosses Sacbe 3 in Coba. This forms an octagonal plaza which has a four meter high pyramid with stairways on all sides (Villa Rojas 1934:201).

Four roads are also mentioned in inscriptions at Copan and Caracol. Step 6 and 29 of the Hieroglyphic Stairway at Copan mention the words *chante' sakbih* or "the four white roads". Stela 6 at Caracol refers to *chan u-bih K'inich*, or "four are the paths of the sun", maybe referring to the sunrise and sunset during the two solstices (Stuart 2006:2-3).

In the Popol Vuh five roads with five colours are mentioned (actually there are four roads mentioned twice but only three of the colours are the same on both occasions) (Tedlock 1996). The crossroads (*kajib' xalkat be*) in the Popol Vuh is a four-way intersection that tied the cosmos together. The crossroads is a place for blood sacrifice and spiritual communication (Edmonson 1997:135, 150). The road of Xibalba (*ri be xibalba*) was the road that beckoned to *Hun Hunahpu* and *Vucub Hunahpu* when they went to the Underworld. This was also called the black road (*q'eqa be*). The black road was the great rift in the Milky Way which runs to the north from where the ecliptic crosses the Milky Way. It was a road that descended down to the Underworld near the ballcourt called "Great Hollow with Fish in the Ashes". Hun Hunahpu and Vucub Hunahpu entered the black road which led them to their death. Hun Hunaphu's sons went on another road which is not specified. It might have been the green road (*raxa be*) as that road was not mentioned in relation to their father and uncle. The green road would have been the middle one and in the Popol Vuh it is the only road that a living humans travel along. It is the only road the lords of K'iche' mention in their prayers. The green road is sometimes called the yellow road (*q'ana be*) and on these occasions it is associated with the south (Tedlock 1996).

The triadic pattern

Another "cosmological" or "symbolic" pattern is the triadic pattern. It is seen at three of Ichmul's termini sites which consist of large older termini structures that have later additions of two other smaller and unequally sized structures. These are aligned on the sides or corners of the plazas, forming triadic patterns. The rear sides of the large central buildings are oriented toward the termini plazas (Flores and Normark 2005b; Normark in preparation). However, in other cases of triadic patterns the large central building faces into the same plaza as the two smaller ones (that each tends to be of similar size). Even central Ichmul may not have had a quadripartite layout, but maybe a tripartite. The possible origins of the triadic causeways in Ichmul (these are unknown due to Colonial and modern settlement), were perhaps associated with three different pyramids. Maybe this reflects a triadic political organization, which also has been discussed for other sites. Many sites also have the number three (*ox*) in their original names, such as Calakmul (*Oxte'tun*), Caracol (*Oxwitza'*), Copan (*Oxwitik*), Seibal (*Oxtun*), and Uxmal (*Oxmal*) (Rice 2004:268).

Not only do we have a triadic pattern at Ichmul's termini, the causeways are three in numbers as well. For this reason, the triadic causeways at Ichmul are similar to the Andrews, Bullard and Gifford causeways at El Mirador. Folan argues that these causeways represent astronomical alignments similar to the openings in the Caracol of Chichen Itza which seem to have been aligned with the sun and Venus (Dahlin, et al. 1980; Folan 1991:226). This was probably not the case at Ichmul where the causeways have other directions.

Triadic patterns are common in Late Formative architecture, such as at El Mirador and Nakbe (Hansen 1998), but it can also be seen at Late Classic sites, such as the Caana at Caracol (Chase and Chase 2001) or the cross temples at Palenque (Schele and Miller 1986). Although there are Late Formative ceramics at Ichmul's termini sites, this particular triadic arrangement, intended or not, seems to be from the Terminal Classic.

The symbolic meaning of the triadic pattern has been attributed to either the 3-Stone-Hearth, (the three hearthstones of creation), or in the case of Palenque, the Palenque triad gods

(Schele and Miller 1986). Taube (1998:431-440) believes that the imagery of 3-Stone-Hearth relates to jaguars, fire and water. Sedat (1992:86) has noticed the presence of triadic dot clusters that may be connected to fire-related rituals.

However, triadic patterns are seen in many other different constellations. At Mayapan, Pugh argues that the Castillo ("mountain"), and a cenote ("sea") separated earth and sky at creation which in turn was empowered by the wind of Ehecatl in his round temple. These three features are believed to replicate the three stone hearth in the centre of the quincunx (Pugh 2001:251). The triadic pattern has also been found in a cave. In Aktun Tunichil Muknal in Belize, there is a 3-speleothem-cluster surrounded by other artefact clusters believed to be the remains of ritual circuits inside the cave (Moyes 2005:286). E-groups have also been associated with the triadic pattern (Aimers and Rice 2006; Rice 2004). The three structures or stelae in the eastern part of E-groups are seen as the "Six Sky Place" associated with the world tree and the hearth (Stanton and Freidel 2005:234).

In Stanton and Freidel's Kan-cross model of Yaxuna, the eastern part of the east-west axis has two Late Formative dance platforms with corridors leading to rooms that are placed in the four cardinal directions. These corridors would have been covered and the structures are believed to have resembled turtle carapaces in which the four doorways would have constituted the head and limbs of a turtle. Late-to-Terminal Classic platforms at Chichen Itza have also been built to resemble turtles. The quatrefoil pattern of the platforms is associated with the Underworld and the resurrection of the Maize God. It is believed that there once were three platforms, and that the third was covered by the East Acropolis. If so, they formed a cosmic hearth. The Maize God is connected to the cosmic hearth. The eastern location of these platforms at Yaxuna may associate it with the sun rise. It is argued that the east-west axis at Yaxuna is related to the resurrection of the Maize God who arose from a crack in the turtle's carapace (Stanton and Freidel 2005:231-234).

In most archaeological cases, the triadic pattern is not pure. There tend to be other structures in the vicinity. There is seldom a pure quadripartite layout either, only deviations from a supposedly ideal pattern.

Subterranean and celestial roads

There is a widespread belief that there exist underground or celestial causeways which connect various sites, such as Coba and Chichen Itza. A subterranean route from Chichen Itza to Uxmal and Tenochtitlan is believed to exist (Bolles and Folan 2001:300). Local informants in Ichmul mention a mythical road which connects the T-shaped vaulted passage in the eastern part of the Central Acropolis in Ichmul with Yo'okop. Yo'okop is similarly said to be connected to Coba and Chichen Itza (Flores and Normark 2004b).

The most famous of these mythological roads is the sky-umbilicus called ***kusaansum*** ("living rope") which is a blood-filled tube that fed the kings with life-sustaining powers (Tozzer 1907:153). The idea that it carries blood between sites, is by Kristan-Graham (2001:351) believed to relate to the idea that blood recalls the way in which political relations create economic sustenance. The myth is assumed to emphasize the relation between causeways, alliance and tribute.

This tube transported life-force between the Underworld, the human world and the heavens. The kusaansum between Maní and Mérida was "cut" by the Spaniards which is believed to signify the break between the communities (Burns 1992:56). Causeways are sometimes believed to have had the function of transporting life-sustaining powers (Ringle 1999). Forrest claims that the underground roads at Maní connect the town with the past and the surface roads connect the town to the modern world (Forrest 1997:246).

Astronomy

Archaeoastronomy has been popular for quite some time in the Maya area (Aveni 1992; Aveni, et

al. 2003; Milbrath 1999). However, its most recent popularity came when Freidel and others (1993) singled out the Milky Way as crucial for understanding cosmology in the Maya area. It is assumed that the two cardinal axes (east-west and north-south or zenith-nadir) were conceptualized as the ecliptic and the Milky Way. The Milky Way was the axis mundi (Wakah Chan) or the world tree, which united different levels of the cosmos (Freidel, et al. 1993). The main portion of the Milky Way is also called *saki be* ("white road") by the modern K'iche' (Tedlock 1992:181). During the rainy season, the Tzotzil at Zinacantan call the Milky Way *be vo* ('the road of water') and it is associated with rain, clouds and roads (Vogt 1976).

The Milky Way was also the place where the soul came after death. The black part of the Milky Way is called *Xibalba be* ("road to the Underworld") by contemporary K'iche' (Freidel, et al. 1993:231-233). At the southern end of the Milky Way was the entrance to Xibalba or the Underworld (ibid:222). This area is lined up with the crossroads between the Milky Way and the ecliptic. The stairs of Structure 5C-2nd at Late Formative Cerros has been interpreted as this white road between four mask panels that are believed to have represented the sunrise and the sunset (Reese 1996:120).

Folan argues that some causeways and their associated architecture at Coba may have been oriented to align with astronomical bodies, such as planets, bright stars, summer solstice sunrise and winter solstice sunset. The arches on some causeways (Coba, Chichen Itza, Cozumel, Kabah and Uxmal) may have been alignments for tracing the celestial bodies (Folan 1991:226). The idea of causeways being aligned to stars or planets was mainly developed for Coba, which has at least 45 causeways radiating out in all sorts of different angles. Any causeway at that site points toward a star, star constellation or a planet at a certain time of the year. Even if one considers the effect of the precision of the equinoxes (which means that the direction of earth's axis changes with time), any such interpretation is highly speculative.

Sometimes the quincunx sign shows up on the forehead of a snake (Montgomery 2003), an animal resembling the road in form. In contact period K'iche' myths, the sun was carried by a two headed serpent (Fox 1991:221). Dunning (1992:147) believes that the Uxmal-Nohpat-Kabah causeway is a geomantic alignment that resembled a celestial serpent (Lamb 1980). The base of two of the balustrades of the Castillo at Chichen Itza has serpent heads. Just before the equinox sunset, the corner of the structure's nine layers casts a shadow on the side of the staircase. This zigzag shadow looks like the serpent is descending down the pyramid (Rivard 1971). The causeway to the Sacred Cenote is to the north, which is the direction the "shadow serpent" seems to be heading (Bassie-Sweet 1996:88).

As the quincunx sometimes is associated with celestial roads, such as the sun's path, it should not come as a surprise that we find it in glyphs that relate to time. The quincunx pattern can sometimes be found on the head forms of the *k'in*, *winal* and *tun* glyphs (Coe and van Stone 2001). It is possible that the quincunx associates with the sun's path or the ecliptic during the solstices (Milbrath 1999). The contemporary Yucatec word for the day after tomorrow is called *ox be* ("three road"). The word for now is *beora*, which is a Spanish-Maya hybrid from the Spanish word *ahora* (Hanks 1990:312; Keller 2001:12). *Ok be* or *ok k'in* ("enter road" or "enter day/sun") mean to die or sunset. *Tan be/tan k'in* ("middle road/middle day/sun") means the middle of the day (Keller 2001:13)

Among contemporary K'iche', the daily path of the sun is called *ube sak, ube k'ij* ("road of light, road of day") and is described as *oxib utzuk', oxib uxukut chupam sakil* ("three sides, three corners in the light"). It is visualized as a triangle which is the points of transit of the sun during the day (sunrise, zenith and sunset). The celestial bodies that move along the same road as the sun during the night forms *oxib utzuk', oxib uxukut chupam k'ekum* ("three sides, three corners in the dark") (Tedlock 1992:179). The sunrise and sunset of both the winter- and summer solstices are called *xolkat be* ("change of road") by the K'iche'. This reflects the back and forward movement

of the sun at the solstices (Tedlock 1992:180). Copan's Temple 11 has an inscription dated to the 24th of March 772 that contains the hieroglyphs **bi-hi**. The word road may here relate to the vernal equinox and the path of the sun (Stuart 2006:2).

The plazas in front of an E-group, an architectural constellation by some believed to be associated with equinoxes and solstices, are sometimes accessible by causeways (Aveni, et al. 2003:173). The E-groups are assumed to have a similarity with triadic constellations, as the eastern platforms have three structures (Aimers and Rice 2006; Rice 2004).

When Venus is a bright "star" in the east, just before dawn, the contemporary K'iche' calls it *ëko k'ij* ("sun carrier" or "sun bringer") and its path is called *ubeal ëko k'ij* ("the road of the sun bringer") (Tedlock 1992). In hieroglyphic writing, Venus was *Chak Ek'*, the "big star", which has been assumed to have a particular significance for warfare (Martin 2001b). However, Aldana (2005) believes that Chak Ek' relates to meteors. The moon was associated with the goddess Ix Chel, a name which means rainbow woman. Rainbows were believed to have come from caves and it was associated with a sky-serpent (Bassie-Sweet 1991:86).

However, one might question the archaeastronomical frenzy that struck Mayanists in the late eighties/early nineties. For example, "mountain spirits" (*tzuultaqa's*) are more important than celestial bodies for the contemporary Kekchi. Celestial objects, such as the sun and the moon, are more important for large scale kingdoms (larger than the spatial extent of the various political formations usually discussed for the Maya area). This is because such kingdoms are integrating people and in this sense local shrines and mountains are limited in spatial extension, whereas the sky is not (Wilson 1995:104).

Divinities associated with causeways

Bolles and Folan (2001:311) argue that some mythological figures were associated with roads. These were *Ix Sak Beliz* ("She who walks the white road"), *Ixchel, Kukulkan*, *X-Nuk*, the *chaaks*, *Itzamnaaj,* the Enchanted Twins and *Xkik*. The rain god Chaak's grand mother, *Ix Sak Beliz*, is believed to live on a white road. If so, the flooding of some causeways may have been a deliberate construction. For example, two causeways run through a seasonally-flooded aguada on Cozumel (Freidel and Leventhal 1975:68-69; Freidel and Sabloff 1984:84). Merchants travelling along the roads set up stones on which they sacrificed incense to the merchant god *Ek Chuah* in search for a safe journey (Landa 1959). Present travellers also leave stones at the crosses at the entrances to towns (Forrest 1997:227).

Alberto Flores entertains the idea of a relationship between the Black Christ and causeways. The Black Christ is believed to partly associate with the Postclassic Yucatec merchant god of Ek Chuah, who was depicted in black colour (Flores and Normark 2004a; Navarrete 1999). It is believed that Ek Chuah was God M, a god that actually did not exist in the Maya area before the Postclassic (Taube 1992:88-89). However, God M shows similarities with God L, the Classic period merchant god, which also was painted black. This aged god was connected to the Underworld, cenotes, rain and lightning (Taube 1992). Ichmul has a Black Christ which sometimes is related to trade, water, caves and cenotes (Navarrete 1999). For example, apart from visiting the Basilica of the Black Christ at Esquipulas in Guatemala, pilgrims stop at a nearby hill, at crosses, and at caves along a river (Adams and Brady 2005:311). The Black Christ has also appeared in a cave near Zinacantan (Manca 1995:224; Vogt and Stuart 2005:175). There is a possible water source located where, or near where the triadic causeways of Ichmul were laid out. This place is today covered by a sancturay dedicated to the Black Christ (Flores and Normark 2005a). However, one must consider how older beliefs in the Terminal Classic could have survived until the Colonial period. These beliefs would have changed and the only definite continuity would have been the possible cenote, which would have acted as a node for ideological production and reproduction. Such a local reproduction of ideology is a more likely process than the all-too-generalizing concept of

syncretism, which relies on the idea of the merging of large scale religious and cultural patterns (Normark in preparation).

Ancestors

Ancestors are another central theme in "Maya" cosmology. This theme also relates to the discussion of social organization. Ancestor veneration relates to rituals and activities which surround the burial and commemoration of founding ancestors of certain kin groups. By the use of oral memories, written documents, and buried ancestors within household shrines, people of a social formation could legitimate their claims to land. The physical use of the same area over generations made the ancestors important but it alienated some people from such resources (McAnany 1995:8-11). The very lack of a shrine may indicate that the household was young and therefore lacked ancestors (ibid:55). Reoccupation and the use of earlier inhabited environments is believed to have been a common strategy for the ancient people in the competition for habitable land, especially during the Postclassic. Lineage histories with ancestors were recreated during migrations and they were transplanted to re-settled sites (Lorenzen 1999).

When objects and buildings were used, reused and destroyed, their forms and meanings changed. Ancient objects in the Maya area were thought to be petrified beings from the pre-sunrise era. Some 20th century Yucatecans believed that the ruins were created by dwarfs. The "animate nature" of ancient structures and objects may be one reason why they were reused in later social formations. Middle Formative Olmec jades were re-carved in the Maya area during the Classic period. Olmec jades have also been depicted in Classic period murals at Teotihuacan. Such objects were believed to be relics from an earlier and flawed age which was destroyed so that the present age could be formed in a proper order. Objects were used as mnemonic pegs for storytelling around norms of the present social formation. Humans and ancient objects co-occurred and co-inhabited the same space and were part of daily life (Hamann 2002:351-353).

It is believed that the origin of ancestor veneration lay in the Early or Middle Formative period. McAnany and López (1999) argue that the Middle Formative mortuary activities at K'axob in northern Belize created ancestors, which emphasized continuity through rituals and conveyed resources through generations. However, Joyce (2004) believes that ancestor veneration was an unintended outcome of social activities and that it emerged later. Further, burials in household sanctuaries do not need to relate to ancestor veneration. The phrase "living with the ancestors" (McAnany 1995) could perhaps be phrased as "living upon series of buried people", since we do not know the identity of the interred people and how the living viewed them.

Becker (1992:186) argues that caches and burials were different means to the same end. This would have been to feed the gods or ancestors. Caches are common in architectural settings and were used to establish and consecrate sacred space. To my knowledge, no dedicatory cache has been associated with causeways. Although caches and burials have never been of interest in the settlement survey carried out by the CRAS-project, six Terminal Classic burials were located at Ichmul and these are somewhat indirectly associated with the triadic causeways at the site (Flores and Normark 2005a). Several burials have been found in association with Sacbe 2 and 5 at Dzibilchaltun (Coyoc and Uriarte 2003).

The death phrase och bih, "to enter the road" (Stuart 2006), indicates that at some sites, the existence after death started by travelling along a road, most likely to an ancestral place. In a very physical sense, there are causeways that connect what may have been ancestral shrines or temples with other sections of a site. On some rare occasions, a causeway connects architecture with caves, places which were associated with ancestors. The cave Aktun Nakbe is linked to the surface site Cahal Witz Na in western Belize (Personal observation 2001; Walker 2000).

There might have been an "ancestral" construction plan at some sites, similar to the one proposed by Harrison and his triangles at Tikal in which a burial temple was constructed in

alignment with two other burial temples, forming triangles (Harrison 1999).

Ancestors tend to be associated with the north in the Mayanist cosmological models. Royal tombs were interred in Yaxuna's Northern Acropolis and they were probably associated with ancestors. The living would have "legitimized" their right to power by using the north-south aligned Sacbe 3 as a metaphor for the axis mundi in which the royal family lived at the southern end of the axis (Stanton and Freidel 2005:236).

Thus, it is argued that causeways became part of the ancestor veneration, particularly on a grander scale than on the household level. In some cases, pyramids at the end of causeways contained tombs. This is not only the case for the Maya area. If I let myself make a general analogy, correlations between tombs and roads have also been found in Bronze- and Iron Age Europe where the spatial connection between roads and burials are believed to have visualised the ancestors and claims to land. Four times as many burial sites from around 450 B.C. have been found along main roads than along local roads in Yorkshire. This indicates that the cemeteries aimed at a wider audience than only the local group. During the Republic era of Rome (second century B.C.), monumental tombs were constructed along roads but these were not oriented toward the roads. In the first century B.C., the facades of the tombs were oriented toward the roads (Rudebeck 2002:178). The Roman roads in Britain usually followed the highest points in the landscape. This was probably for militaristic purposes, as it was safer to travel on higher ground with a good view. Burials were often placed along these roads (ibid:182).

Time

It has been acknowledged by most Mayanists that the calendars were an integral part of cosmology and politics. For example, the day sign Ajaw was often fused with the portrait of the king, also called ajaw. The ruler became the time period just as the Ajaw altars at Caracol became the time periods (Houston, et al. 2006). One indication that the calendar was important to the use of causeways can be found in the Madrid Codex. It shows the *tzolk'in* (260 day-cycle) calendar with four arms in the cardinal directions like a quadripartite causeway system. It has footprints that most likely symbolise ritual paths (Rice 2004:147).

Rice (2004) has recently revived the may cycle as an explanation of political authority and power in the Lowlands. This 13 k'atun or 256 year long cycle could have affected the site layout and causeways as well. At the end of the may cycle, the may was re-seated at a new location (Pugh 2001:250). The Itza established Mayapan as the new seat of the may after Chichen Itza (Edmonson 1986:58-59). Thus, according to this model, the reason why the radial pyramid called El Castillo at Mayapan resembles the building with the same name at Chichen Itza is that Chichen Itza once was the centre of the may. Basically the structures were the same structure but at different times and places. They are both associated with creation and the wanderings of *Kukulkan* (Quetzalcoatl) and the seating of the may (Pugh 2001:251).

Similar radial pyramids are known at other sites. Tikal has several in the form of Twin pyramids. Both Keller and Rice associate these Twin pyramid complexes with the causeway system of the site. The pyramids are seen as being crucial nodes of k'atun period rituals and processions. Keller argues that the Twin pyramid complexes move around the site centre and this is similar to the movement of the year gods of the Colonial period (Keller 2001:16). The pyramid groups are sequentially constructed and mark a counter clockwise circuit that began with the northern Complex M (A.D. 692) and moved onwards, to the other complexes by the wide causeways (Rice 2004:148).

Rice writes that the roads and idols of the may k'u centre were destroyed and abandoned at the end of the may cycle (Demarest, et al. 2004:566). Although the cutting of floors was a desecratory act that could relate to such rituals (Suhler, et al. 2004:465), what was meant by destroying the road was probably not the physical roads, but the "life-road" of the city. Still, cutting or destroying

causeways may be examples of ending political and social alliances (Kristan-Graham 2001:352). Krochock (1995) believes that an abruptly ended causeway near the Temple of the Hieroglyphic Jambs at Chichen Itza was ritually terminated, maybe during a may cycle ritual. The road bed of the Ichmul-San Andres causeway has been cut, probably due to a collapsed saskabera, and probably unintentional and not related to the termination of roads (Flores and Normark 2004a).

Processions

Causeways were most likely used in ritual circuits and processions since they were a form of extended stages. Coe (1965) suggests that such ritual circuits integrated social solidarity between the settlements (Reese-Taylor 2002:152).

Reese-Taylor (2002:143) has studied individual ceremonial circuits in relation to ritual events. The ritual circuit is a movement, often by a formal procession between different locations during political or religious ceremonies. This movement halts at particular stations in order to perform rituals. For example, the various nodes along the north-south aligned "beads-on-a-string" causeway of Sayil may have been used as ritual stops along an extended procession from the royal palace to the ballcourt. Reese-Taylor defines three categories of ritual circuits; ritual circumambulation, periphery-centre circuits and base-to-summit-of-mountain circuits (Reese-Taylor 2002:145).

Ethnohistorical data suggests that Wayeb rituals were associated with causeway processions (Ringle 1999:208). Wayeb was the five last days of the 365 day long year. Landa (1959) described how the roads were cleaned and festooned with arches and green branches up to the akantuns where the Wayeb statue was located. The statue was carried with rejoicing and dancing (Forrest 1997:75). Houston (2006:144) argues that praying was done with the feet in dancing, at least during the Classic period. During the Contact period New Year ceremonies, images were brought from one of the four cardinal directions, back to the centre and then out to another cardinal direction, in a counter-clockwise fashion (Reese-Taylor 2002:153). Thus, the Wayeb processions moved from east to north-west-south. Such temporal cycles resembled the quadripartite space depicted on the backs of turtles and crocodilians (Pugh 2001:250).

Another ceremonial circuit was the pacing of the k'atun. It was a counter clockwise procession which included measurement of the land when land titles were confirmed. During a baktun ceremony in 1618 (Edmonson 1986:25-27), the procession consisted of god-impersonators and priests that conducted fire rituals. World tree symbols and surveying sticks were carried (Rice 2004:147).

In the contemporary Yucatec area, rituals create a "road" when the *hmen* (the ritual specialist) moves from one place to another. The cardinal directions are cited in a specified order, often counter clockwise, and east is the opening of the road (Hanks 1990:299). In curing ceremonies at Chan Kom, participants travel in a ritual circuit to the four entrances of the village and bury crosses, obsidian and salt in the road to remove evil winds. After this they return to the cenote and toss 13 wooden crosses to prevent the winds from coming out of the cenote (Moyes 2004:285; Redfield and Villa Rojas 1962:176).

Ritual processions and visits to different sacred places also occur in a calendric order among contemporary K'iche'. Ritual leaders perform a four-part ritual circuit to the four corners of their world. At the centre is a *wakibal* ("six-place") shrine (Tedlock 1992). It is the lineage heads who usually perform these processions. The visited places are locations where the ancestors "sleep". These processions are also made to mark the limits of the land the lineage owns (ibid).

On All Saint's Day on Flores Island in Guatemala, there is a counter clockwise procession around the island, with stops for prayers in the four residential quarters (Rice 2004:80). A final example of contemporary processions are the male saints that move around the church in Chamula in a counter clockwise direction, from west to south, east, north, and back to the west. The female saints are carried around in the opposite direction (McAnany and Plank 2001:117).

If we leave the Colonial and ethnographic sources, what do Mayanists have to say about Prehispanic processions?

Kristan-Graham (2001:353) suggests that the ritual movement at Chichen Itza replicated migration. Ringle argues that causeways primarily were used for movement from centre to periphery and back again, like the flow of ch'ulel. He further speculates whether possible Late Formative dance plazas, associated with causeways, were the prototypes of the popol na during later periods. These later structures are often linked to causeways (Ringle 1999:207).

Reese argues that in the planning of the Late Formative site of Cerros, structures and causeways were arranged so that transitions from one place to another occurred in a single performance venue where rituals dramatized the creation story by moving between mythical points/places (Reese 1996:173-181). She emphasizes the north-south axis at Cerros which has three ballcourts. The site has a descending topography from north to south. To the south there is a depression which is wet from excess water led there from the causeways, and to the north there are temples. This forms a dichotomy between the Underworld and the heavens. The ballcourts form the path where the ritual circuit would have passed (Reese-Taylor 2002:161). The First Father (the Maize god) laid out the "Six Sky" and "Eight House Partitions" place by circumambulating space (ibid:147). This circuit would have begun at Structure 6 and then continued to the central ballcourt where the performer "entered the road". The procession would have followed a path around the settlement in a counter-clockwise direction (Reese 1996:173-181). Reese argues that the buildings at Cerros depict a Snake-Mountain surrounded by water, which would identify the place as the legendary Ah Puh, the place of the reeds (Tollan in Nahuatl) (ibid:117). Tollan is believed to be the ideal model for political authority during the Postclassic (Akkeren 2000; Sachse and Christenson 2005). If this is applicable to the Late Formative site of Cerros is another matter.

Ritual processions are depicted in the murals of Bonampak. Performers use long banners with slender staffs. A monolith found at Cerros may have been a banner holder (Reese-Taylor 2002:153, 156). The Bonampak musicians walked in clockwise fashion, that is, in the opposite direction of the procession (Miller 2001:214).

There existed ritual routes that did not involve causeways. Maca (2002) notes the presence of U-shaped architectural groups that define a rhomboid, which is believed to mark the cardinal directions of the boundary around Copan. He suggests that these groups mark positions on a ritual circuit (Ashmore and Sabloff 2003:232). Baudez (1991) believes that both annual and k'atun cycles were celebrated by ritual processions throughout the quadripartite sectors of Copan (Rice 2004:53). The Wayeb rituals included similar processions (Coe 1965).

The base-to-summit circuit unites the three realms of the cosmos. There might have been processions on the staircase of the Castillo at Xunantunich. This is believed to have transformed the king to a god (Reese-Taylor 2002:159). Some causeways that ascend slopes, such as Sacbe 1 at Yo'okop, could possibly be part of this form of circuit. Sacbe 1 has a direction towards a structure believed to be a water shrine (S5E1-1).

The microcosmological level

In most Mayanist studies, there is a general lack of trying to understand the level of human agents. Exceptions are found in household archaeology (Robin 2003), gender studies (Gillespie and Joyce 1997), and in some epigraphic and iconographic studies (Houston, et al. 2006). Some of these have a cognitive, semi-phenomenological or a practice/performative oriented perspective. I do not intend to critically penetrate into the theoretical problems with such perspectives here, I shall save that for Section 3. Here I will mainly describe the way in which the past human agent is related to the environment as seen in some Mayanist studies. This may be of importance in trying to place the human agent in relation to the causeways and other materialities.

In some recent Mayanist studies, there has been a switch to "microcosmological" relations

between landscape, architecture and the human body. Here the body resembles the landscape or vice versa. Architecture was sometimes given human physical attributes, or was related to human clothing. Roof combs and headdresses have sometimes been associated with each others. The benches at Bonampak's Structure 1 were painted in a pattern resembling underwear. Thus, the "body" of the building was decorated in a way that related to something that could be worn by a human being. The exterior of one of Bonampak's buildings has stripes which Miller believes resembled striped human flesh (Miller 2001:204). The term *ool-tan* found in association with the Yaxchilan queen *Ixkabal Xook's otoot* ("home") is related to the heart (Plank 2003:182). Plank (2003:582) suggests that the "built environment", should be replaced by "dwelt environment", as almost everything could be inhabited by animate forces.

In the organic view of settlement layout and architecture, the heart or the navel would be seen as the centre of the site. The Prehispanic K'iche' believed that an umbilical cord connected the earth with the navel in the sky. The navel or the *Heart of the Sky* is where Polaris is today, but, owing to the precision of the equinoxes, this was a dark place called *wak-chan-ki*, "raised-up sky heart" or *ool* "heart" during the Late Classic (Freidel, et al. 1993:103-105). Even today, there is a relation between the heart and the umbilical cord. The Tzutujil word for heart and umbilical cord is the same (*r'kux*) (Prechtel and Carlsen 1988:126). Heart is also the name for ritual bundles, often depicted in Prehispanic iconography. These bundles are sometimes used in contemporary processions (Prechtel 1998; Sachse and Christenson 2005). Causeways could have been symbolic umbilical cords extending from a centre/heart/cenote/cave.

In the interior of the body, intestines and umbilical cords transported *itz* (the sap of the world tree), and the veins transported blood to every part of the body (Freidel, et al. 1993). What they transported was *ch'ulel* or *k'uhul* (divine/holy essence). Ringle suggests that since ch'ulel is found in the heart and circulates in the blood it may relate to a belief in the efficacy of motion on a grander scale. This flow would have seeped out from the world tree/centre and then flown out with the causeways (Ringle 1999:200).

Humans embodied the four cardinal directions in their arms and legs. The twenty fingers and toes were manifestations of time. The words for "twenty" and "person" (*winik* or *winak*) are similar in Maya languages. Twenty digits signify a complete being among contemporary Tzutujil (Carlsen 1997:55). The hand also unites the living family members among the modern K'iche', ranked from the babies (little finger) to the oldest relative (thumb). This scheme is used in divination (Tedlock 1992). The importance of the hand is indicated by its frequent depictions in hieroglyphic writing (Palka 2002:434). Hands in the iconography may in some cases have indicated the sense of touch (Houston and Taube 2000:264). The hand was also associated with fertility as when Xkik' in Popol Vuh became pregnant once Hun Hunahpu's decapitated head spat in her right hand (Tedlock 1996).

The left and right sides of the body also reflected macrocosmical relations as these sides are the different sides of the daily path of the sun (Stuart 2000). When a daykeeper ("diviner") in Momostenango prays, he or she faces eastwards, towards the rising sun (the symbolic present and future). In this position, the back is facing westwards, the place where the sun sets, which is also the past. The right, and male side, of the body is facing the south and is seen as the four corners of the sky. The left, and female side, of the body is facing the north and is seen as the four corners of the earth. The cardinal directions are also associated with different mountains, ceremonies and days (Tedlock 1992:140). Among contemporary Kekchi, sacred sites such as roads, rivers and market centres are believed to be feminine (Adams and Brady 2005:318). Travelling and encountering people on causeways was perhaps connected to left and right dichotomies, as another person had to be met and passed on either side.

The spatial coordinates of the human body also imply moral evaluations among the contemporary Yucatec. Up, front and right are related to something morally positive. Things that

come from the front are benevolent, honest and are in clear view. Things that come from behind are dangerous, hidden and oppressive (Hanks 1990:91-92). It is possible that similar ideas existed in the Classic period as well. The positions of different agents in relation to each other in iconography suggest that this may indeed have been the case (Normark 2000; Palka 2002). Whether or not the elevated causeways set people in higher moral esteem in relation to people not on the causeways will just be speculation, but Aztec sources indicate that the elite (people with a high moral esteem) travelled on roads which were removed from commoners (Hirth 1991).

In the Popol Vuh, it is said that the body was created from corn. The planted corn was oriented to the four corners of the world, in a way similar to today (Tedlock 1996). The corn planted in the centre was placed in the navel of the "Na Goddess" and the corners most likely represented her fingers and toes, which explain the intimate relationship between digits and corn kernels. Although the creators had created the quadripartite world, it did not exist until the bones of the "Na Goddess" were planted. She became the soul of the earth and she gave it life. It is likely that the four colours of corn was planted in different corners since these corners are associated with a certain colour. The Maize god interred five corn seeds in each corner, which is one per digit (Bassie-Sweet 2000:13). In this view, the earth itself is the soul of the earth whose various parts may relate to various features in the landscape that were likely to affect the layout of causeways.

Data from contemporary, Colonial and Prehispanic social formations in the Maya area indicates that people view and maybe previously viewed time as a living being which influenced how they should act. This concept of time derives from their concept of the body (Houston, et al. 2006; Normark 2000). Among the Yucatec, the sun is male, high and in the east. The moon is female, low and in the west (Hanks 1990:305). Among the Tzutujil, the day is seen as the masculine phase of the Earth and the night is its feminine phase. The whole year is also genderized in similar ways. The Tzutujil sees time as a living thing which has to be born (Prechtel and Carlsen 1988:127). In fact, it has been argued that the length of the 260-day long tzolk'in cycle originally was derived from the length of human pregnancy. Among the modern K'iche', it is believed that a newborn child already has lived for one tzolk'in (Miller and Taube 1993:48). The glyphic term, found at Tonina, for this calendar was *13 tuk* (Houston, personal communication 2003).

The senses

Houston and Taube (2000) argue that the senses are connected in a near-synaesthetic fashion, in which one sensation releases another sensation. For example, we always look toward sounds, which shows that perceptions are integrated (Giddens 1984:46-47). This means that stimulus in sight, trigger perception in hearing or smelling. Something seen by the eye in the iconography would convey or signal the presence of parallel sensations that otherwise were experienced by the ear or the nose. This synaesthesia is not neurologically triggered but is dependent on the human agent's socialization (Houston and Taube 2000:261-263).

From iconographic and epigraphic studies, there appears to have been a perceptual and interactional field that included bodies and actions. The *y-ichnal* expression of the Classic period is a cognate to the contemporary Yucatec *y-iknal* (ibid:287). Iknal is either a habitual place with a fixed position in space or it is a corporeal field of interaction that is not fixed in space. It is connected to the corporeal actions of an agent, often in front of the body (Hanks 1990:91). There are indications from the Petexbatun area that the ichnal shifted as deities associated their ichnal with different place names. Ichnal also related to what was "down" and to the "left" from the ruler's point of view. Thus, it seems that broad visual fields were more important in the architecture than sightlines through different openings or corners (Houston and Taube 2000:288). Houston sees ichnal as a possessed particle that may explain the concern with certain architectural forms, such as the plaza since these can be observed from one point (Houston 2006:140). Plank (2003) has argued that buildings had their own ichnal. One can wonder if the straight causeways also related

to the concept of ichnal.

Sight dominates the "Western" concept of the senses but in the Maya area, each organ had an individual consciousness (Houston and Taube 2000:264). The organs could make their own decisions. The eye was procreative since it affected and changed the world which it saw. The eye was not a receiver but reached out to absorb the world (Houston 2006:141). Thus, sight had an agentive quality. In Popol Vuh, the first humans were blinded so they would not be all-seeing and all-knowing (Houston and Taube 2000:281; Tedlock 1996). Further, the sun was associated with the eye. The solar sign *k'in* sometimes replaced the eyes in the iconography. One of the royal titles was *k'inich ajaw,* meaning "sun-faced" or "sun-eyed" lord (Houston and Taube 2000:282). A text found in the Naj Tunich cave mention *il-b'i(h), il-way* ("see the road, see an aspect of the soul"). It may relate to spectacles inside the cave (Houston 2006:141), and the mentioning of road could perhaps relate to the impressive cave itself.

Flowery emblems at House E at Palenque indicate that the building itself may have been used in a synaestethic fashion to secrete aroma (Houston and Taube 2000:265). Thus, buildings would have affected all senses, not only sight, but also smell and hearing.

Sound is another important aspect of our senses, so important that the very royal title ajaw meant "he of the shout, shouter". The king's speech was hot and solar in character. Speech was associated with breath and wind among the Colonial Yucatec. Many Late Classic vessel scenes have speech scrolls that connect an agent with a hieroglyphic text. Hearing was also associated with jade and flowers as the large flowery shaped jade ear spools indicate. A jade ear spool found in *Janaab' Pakal's* tomb at Palenque contained the text *ub'-j-iiy* which means "it was heard" (ibid:273-278).

The straight and open causeways would have allowed both sight and sound to be clear. A curvy path would make it possible for surprises or for something dangerous to hide. On a straight and wide causeway that would not be possible. Sound also travels upward, sometimes this is the way a causeway entered a plaza and nearby pyramidal structures.

Summary

Causeways without a doubt reflect different levels of social activity and meaning in the past, as roads do today; from the single human agent to hierarchical relations between centres. Roads and paths at contemporary Maní are important parts of local knowledge that frame the context for interaction with and in the environment (Forrest 1997:35). Causeways had a structural homology which made it possible to repeat activities along them. They became sanctioned routes as they were constantly being used by repeated acts as it was the best way to communicate in an area and social relationships were reinforced (Schwake 2000:36). Human activity can also be seen on a site level and a regional level. Roads united and separated parts of a site and could therefore indicate the degree of centralization of a site. The roads and routes in a regional area may very well indicate values within and between social formations (which points were connected and which were not connected), as well as adaptation to the environment. A study of causeways in the Maya area could give some insight in how activities, usually associated with politics, social organization, economic structure and cosmological values, were integrated or separated throughout a site and a region over a longer period of time.

However, for reasons that will become apparent in Section 3, causeways and other architectural structures will not primarily be seen as the materialized end result of social practices within a social formation which also reflect socio-political organization or cosmology. Roads and other physical remains will be treated as polyagents or as actualizations of the virtual. Once buildings and causeways had been constructed, they directed human behaviour itself, largely without the intent of the human subjects (Normark 2004c). Thus, the causeways were constructed, maintained, used, connected, inhibited, prohibited and abandoned by inhabitants at sites in the Maya area. In order to better contextualise the causeway we need to describe the various materialities they are associated

with.

2.3. Materialities associated with causeways

Here I shall describe various materialities that are related to causeways at various sites in the Maya area. This description explains the general social, economic, political or religious connections Mayanists use to fill the materialities with. Shaw (in preparation-a) distinguishes four different sets of materialities associated with causeways; (1) Remains after construction and maintenance along the causeway. (2) Additions to enhance the functions of the causeway. (3) Later settlement grown up around the causeway. (4) Older materiality that may be the reason for the causeway's existence and its course.

2.3.1. Karstic features

The Yucatan peninsula consists of a low-lying Cretaceous and Cenozoic marine limestone platform and its northern part consists of a pitted karst flat plain (West 1964). Several caves, sinkholes and other karstic features have been encountered throughout the survey in the Cochuah region. One hypothesis is that the triadic causeways at Ichmul were designed from a funnel-shaped cenote which has been covered by a 19th century church (Flores and Normark 2005b).

Ethnographic studies

Caves have been the focus for much recent research in various parts of the Maya area. The cosmological and symbolic aspects of caves for both ancient and modern inhabitants have been critical in these studies (Bassie-Sweet 1991, 1996; Brady 1997; Brady and Prufer 2005b; Gibbs 2000; Stone 1995). Unfortunately, these studies usually pertain to the cosmological entrapment which largely is based upon ethnographic accounts (Normark in preparation). Ethnographic studies are used to explain Prehispanic material patterns.

Openings in the ground, such as caves or water holes, are the means of communication with the earth deity in Zinacantan. This deity is compensated for giving the humans rain, land and corn (Vogt 1969:375). Most of the Yucatecan caves have been thought to be used only for drinking water but Rissolo (2001) argues that even in places with abundance of drinking water, people used the caves for ritual purposes.

Similar ideas exist among the Kekchi where the tzuultaq'as (mountain spirits) own all the land and are the original owners of corn which humans only borrow (Wilson 1995:54-66). *Tzuul* means "mountain/hill" and *taq'a* means "valley" (Wilson 1995). Tzuultaq'as are the 13 main sacred mountains and those who inhabit the caves of the mountains. It is believed that the mountains are full of water. Crossroads and churches also serve as tzuultaq'as. In dreams, a tzuultaq'a may show up as a road. Roads that unite communities and barrios have small chapels and altars marked with crosses or rocks. The word also indicates journeys. To travel it is called *xo-nume chim tzuultaq'a* ("we passed through these hills and valleys"). A cross marks the tzuultaq'a on a local road. The tzuultaq'as are the crossroads, limits and transition between communities and interests. People on the way to markets, stop at the roadside shrines and sacrifice candles, incense and flowers (Adams and Brady 2004:304-307).

Terminology

Yucatec cave terminology indicates that *dzonot* (cenote) is used for several watery subterranean features. This term is used for any cave with connection to the water table. If it is used to collect water on a daily basis it can be called *ch'en* ("well"). However, the generic word for cave is *aktun* (Rissolo 2001:12-13). The word *ak* means turtle or turtle shell and *tun* means stone. The turtle was an important symbol of the earth. A turtle also carried the three stones of creation on its back.

Figure 4. The Chaak/ Tlaloc petroglyph in Aktun Chakal Ja'as.

The Maize god emerged from a crack in the turtle's carapace (Freidel, et al. 1993). At any site, this crack was most likely the cenote, other caves or human made caves. Aktun was also used for other enclosed spaces, such as temples and later for churches (Clendinnen 1980:381; Forrest 1997:64). *Rejolladas* are sinkholes without water (Kepecs and Boucher 1996).

For the contemporary Tzeltal, caves give the communities their names since the caves are associated with the centre from where the four directions originate (Brady 1997:604). Many Yucatecan place names also refer to caves, cenotes and other water related places. This is apparently an ancient pattern. The hieroglyphic expression *kab ch'een* ("earth-cave") referred to land or property of rulers (Houston 2000:173). A *chan ch'een* ("sky-cave") seems to have been an important centre (Martin 2001b). Sky-cave may also relate to a universal totality, similar to K'iche's "mountain-grass", an idea of the world or the kingdom (Vogt and Stuart 2005:160-162). The caves at large sites may have been a seat for a k'atun or a may-cycle especially since cave names are important in site names, such as Chichen Itza, a proposed may k'u centre (Rice 2004:283). Piedras Negras ancient name was *Yokib'*, meaning "entrance", and may refer to the huge sinkhole at the site (Montgomery 2002).

Caves and cenotes are often found in the centre of Prehispanic settlements in the Maya area. In some cases, particularly in the north, this relation to cenotes are still common. For example, the cenote Cabachen in contemporary Maní is referred to as *tuch ti luum* ("navel of the world") (Forrest 1997:53). In the Yalahau region, seven of eight water-bearing caves have nearby mounds and an unnamed cave within a plaza (Rissolo 2005:358). Similar patterns are known from the Cochuah region, where the karstic features are situated in the centre of the sites of Chakal Ja'as, San Pedro Sacalaca, Xtojil, Yo'actun, Chanmahas and "Xmakaba" (Flores and Normark 2004b, 2005a; Normark 2003a; Shaw 2004c). Caves were important for the intrasite layout and maybe for the intersite layout as well (Normark 2003a). Karstic features were and still are central in various creation stories in the Maya area. For this reason caves became important pilgrimage destinations (Konrad 1991; Turner 1974).

The reason why karstic features had and sometime still have this prominent position is that they are believed to be the residences for the deities who control earth and water. In the rejollada at Chakal Ja'as in the Cochuah region, there is a carved face of the raingod Chaak, with the goggle-like eyes of the Central Mexican raingod Tlaloc (figure 4) just above what appears to have been a water collecting device (Normark 2003a; Shaw 2004c, 2005a).

Cenote

The main characteristics of the karstic northern peninsula are the presence of sinkholes or cenotes (figure 5) (Wilson 1980:5). Cenotes have been formed either from a solution of a limestone surface or a collapse of a cavern during the Pleistocene (Stringfield and LeGrand 1976). A contributing factor here is possibly the Chicxulub crater, which is the remains of an asteroid/meteorite/comet impact 65 million years ago. This event, which some palaeontologists attribute to the extinction of the majority of the Cretaceous fauna, probably had a long lasting effect on the geology of the immediate area although the crater was covered up by Tertiary limestone deposits. Since there are few cenotes within the crater and it has a ring of cenotes surrounding it, later geological formations were apparently affected by this crater (Morgan and Warner 1997).

Cenotes are important sources for water in the Northern Lowlands. They tend to be in the

centre of settlement. The Castillo and the Cenote Ch'en Mul of Mayapan are believed to have been the axis-mundi of the site. The settlement is most dense in the southwest part of the city since there are more cenotes in that area (Pugh 2003:943). Brown (2005:381) argues that the apparent chaotic distribution of residential architecture at Mayapan relates to locations of the forty cenotes of the site.

Figure 5. Cenote in Sacalaca.

The radial pyramid called the High Priest Grave or Osario at Chichen Itza was connected to the Xtoloc Cenote by a causeway. Part of this causeway was enclosed by a wall at a later time. This could potentially indicate that this radial pyramid was used by another group than the Castillo which is a larger radial pyramid (Kristan-Graham 2001:333). A *chakmool* (sculpture depicting a captive) once stood at the entrance to the causeway that leads to the Sacred Cenote at Chichen Itza (Ringle 2004:190). There is a cave between the Sacred Cenote and Cenote Xtoloc that runs below the Castillo (Skidmore 2004).

The eastern causeway at Ek Balam leads to a small architectural group surrounding a cenote (Ringle 1999:208). One of the two causeways at Cuca has a cenote along its length (Dahlin 2000:291). A small causeway leads to a central cenote at T'isil (Fedick and Mathews 2005). Dzibilchaltun has causeways associated with a central cenote (Kurjack 1974).

Caves

Several sites have some of their major architecture built on top of caves, such as at Dos Pilas (Brady 1997) and Mayapan (Pugh 2001). Maybe the large enclosed spaces of the caves were important because it was impossible to construct such large enclosed spaces (Rissolo 2001:347). Where caves were not available, such as at Utatlan and Teotihuacan, people made an artificial cave instead. Stone (1992:112) argues that the ceremonial architecture in itself was inspired from caves (Gibbs 2000:29), particularly since temple entrances were associated with cave openings (Bonor Villarejo 1991).

There appears to be different uses of caves, relating to their inner chambers and their entrances. The interior, which sometimes is difficult to access, is believed to have been dangerous and could have been used by "sorcerers". Some places have traces of rituals at the entrances that may have worked as stages for rituals with audience (Prufer 2005:198, 205). Verticality is another important factor for cave use (Stone 2005).

The use of caves is old. For example, ceramics from Aktun Toh in the Yalahau region indicate a long term use from the Middle Formative and onwards (Rissolo 2001:68). Late Classic ceramics were found in relatively high frequency in the caves of the same area but they seem to be absent on the surface sites of the Yalahau region (ibid:345). It is believed that the caves were used for pilgrimages from a dispersed settlement during the Late Classic. This occurred before the Terminal Classic, and partly contradicts Gill (2000:344) who argues that people increased the use of caves for rainmaking ceremonies during the "drought", A.D. 800-1000. What is more striking is

that the caves of the Cochuah region have few Colonial remains. It seems that the caves lost their central role when the Spaniards came (apart from the water bearing cenotes), probably due to the congregation policy and the influx of new ideas (actual ideologies).

Causeways, as well as other less formal roads/trails or sightlines, sometimes united important structures, caves and people in certain rain and fertility rituals. The site of El Naranjal in Quintana Roo has causeways linking major architectural groups to water-related features such as caves, wells and wetlands (Lorenzen 1999:98). At Cahal Witz Na in western Belize there is a rare example of a 780 meters long causeway that ends at the cave Aktun Nakbe (Personal observation 2001; Walker 2000).

Some caves in the Yalahau region, such as Aktun Toh, Aktun Xooch and Aktun Zodz even had their own interior miniature "causeways" (Rissolo 2001:51, 185). Aktun Xooch has a causeway/floor upon which a small platform is located (Rissolo 2005:355). At Aktun Toh there is a 3.6 meter high pyramidal terraced structure with megalithic well-dressed blocks. It has a pathway that leads to a debris-filled pool (ibid:348).

Death and rebirth - fertility

Humans were created from corn inside a cave. The cave was and still is seen as the womb from where life emerges and ends. Among the contemporary Kekchi, the mountain has a face, head and body and the cave is either the mouth or the womb of the tzuultaq'a (Wilson 1995). Plenty of cave burials in Belize indicate their importance as ancestral shrines and for rainmaking ceremonies (Gibbs 2000:41). Aktun Tunichil Muknal in Belize contains fourteen individuals of all ages (Awe, et al. 2005:225). There can be great variations in burials between nearby sites. For example, Prufer (2005:206, 209) shows that at the Ek Xux cave in Belize there are burials from both males and females of various ages. The surface site lacks known burials. The nearby site of Muklebal Tzul has several burials at the surface site and none in the rock shelter. Prufer sees the burials under structures as pseudo-caves.

There are also known cave burials in the Northern Lowlands. Several burials have been found in the caves and cenotes of Mayapan (Brown 2005:396). Caves near the Yucatec town of Oxkutzcab have carvings that have been interpreted as skeletons, although they also resemble larvae. Strecker (1984:26) believes the carvings relate to fertility and reincarnation.

Traces of human bones are known from the rejollada at Chakal Ja'as in the ejido of Sacalaca (Shaw 2005a). These have been located within a built up water collecting device or well at the bottom of the rejollada, near a cave entrance and the petroglyph depicting Chaak (figure 4). Human bones have been found in water conduits at Copan and these might indicate a symbolic termination of the feature (Davis-Salazar 2006:134). It is possible that similar activities have taken place at Chakal Ja'as, or the bones are washed in from the cave entrance above.

Caves and temples during ancient and modern times are believed to have symbolized both masculine and feminine principles. For example, the Tzotzil word *ch'en* ("cave") is used to describe a woman's vagina (Stone 1995:79). Vulva motifs are not uncommon in petroglyphs found in caves (López, et al. 1988; Rissolo 2001; Strecker 1985). Panel A in Aktun Pak Ch'en in the Yalahau region depicts an anthropomorphic figure with a face carved into the lower part of the belly (Rissolo 2001:131). Maybe it resembles a pregnant woman, but then women are usually not allowed inside caves in some contemporary social formations (Wilson 1995). However, as shown before, burials of both males and females of different ages and status have been found inside caves (Gibbs 2000:41). In some ethnographic studies in the Yucatec area, men collect sacred cave water and women get water from the cenotes (Redfield and Villa Rojas 1962).

Speleothemes are known to have been used as idols and they were considered to be the mouths of gods (Stone 1995). The Yucatec call speleothems *xix ha tunich* ("drip-water stone"), *zuhuy tun* ("immaculate stone"), and *yach kak* ("its penis") (Bassie-Sweet 1991:80-86). Speleothemes

were used in the Postclassic shrines at Naranjal in the Yalahau region. These were broken off from nearby caves. Some of them were found in association with Chen Mul incensarios. One of the speleothemes had also been burned (Lorenzen 2003:41; Rissolo 2001:358). Xtojil, a small cave site in the ejido of Sacalaca may have traces of this kind of speleotheme breaking activity (Normark 2003a). The ancient people maybe viewed the speleothemes as petrified water. Speleothemes were the source of sacred water and as drip water it resembled semen and could only be collected by men (Lorenzen 2003:67-68).

As caves were associated with fertility, water and ancestors it is no coincidence that we find caves depicted in the iconography. The open jaw of an animal was a common motif in the art. It depicted the entrance to a sanctified space or room, such as a cave or a temple (Stone 1995). The Underworld was seen as a serpent's body. The sun was swallowed by a serpent in the west and it was reborn in the east the morning after (Bassie-Sweet 1991:137). Rainbows came from caves according to Maya cosmology and the phenomenon was also related to serpents (Bassie-Sweet 1991:86; Stone 1995:143).

Karstic features may have been crucial in accession rituals. On Stela 11 at Piedras Negras, Ruler 4 is seated on a scaffold with a sacrificial victim below him. Footprints lead up a path which has been bordered by twisted cords. These footprints have been interpreted as prints left by feet that have been dipped in the victim's blood (Schele and Miller 1986). The footprints are located on a ladder and such ladders are sometimes depicted in rock carvings. These have been interpreted as the direction to the water sources within caves (Bonor Villarejo and Sánchez Pinto 1991). Such ladders may have been used to climb down to the bottom of the large sinkhole at Piedras Negras. A sinkhole is believed to associate with the turtle, an animal associated with the kings of Piedras Negras (Martin and Grube 2000). The sacrificial victim lies below the Celestial monster, maybe in the Underworld at the bottom of the sinkhole and the king sits within a skyband, in heaven, maybe at the rim of the sinkhole.

2.3.2. Quarries and saskaberas

Limestone hardens when it is exposed to the atmosphere. Thus, building blocks had to be shaped soon after quarrying (Abrams 1998:126). ***Saskab*** (limestone marl) is a nearly pure carbonate material used for construction (Wilson 1980). It is found below the hard limestone surface. Both limestone quarries and ***saskaberas*** (saskab mines) are frequently found near the causeways at Ichmul (figure 6) (Flores and Normark 2004a, 2005c), Yo'okop (Shaw in preparation-a), Chichen Itza (Cobos and Winemiller 2001:285, 289), Coba (Villa Rojas 1934:201-202) and at Naranjal (Reid 1995:122).

There were at least two forms of saskaberas at Coba (Folan 1978:80; 1982:150-163). The most common are the open mines which have great variation in size. The other form has been excavated under the hard limestone and has created long tunnels. Large mines have an unmined stone pillar to uphold the roof (Folan 1978:80-82). Some of Coba's saskaberas have wells (Shaw in preparation-a).

Figure 6. Collapsed saskabera along the Ichmul-San Andres causeway.

Quarries formed depressions which sometimes were transformed to aguadas on a later occasion. The large palace reservoirs at Tikal and

Calakmul are examples of this. Both Tikal and Calakmul have 13 large reservoirs (Rice 2004:283). Numerous small depressions are found in the Maya area. Apart from being labelled water cisterns, small depressions have also been seen as natural sinkholes, rock quarries, saskaberas, clay mines, and areas of agri-, horti- and apicultivation (Weiss-Krejci and Sabbas 2002:344).

Most sites in the Maya area show a substantial amount of quarrying, not only for construction material, but also for chert nodules to make tools. North of the Bryan and Murphy causeway at El Pilar in Belize is a large midden of knapped chert flakes which produced far more tools than were locally needed. Further, the Bryan and Murphy causeway ends in a hill which shows a considerable degree of quarrying (Ford, et al. 2001). At Uaxactun and Calakmul, there is also evidence for quarries associated with causeways. One causeway at Calakmul could have been used for transporting limestone blocks for construction (Folan, et al. 1995). This may also be the case at El Pilar where the wide causeway ends in a heavily quarried hill. Sites surrounding Chichen Itza could have functioned as quarries for architecture and sculpture in the site centre. Causeway 12 at Chichen Itza ends at the edge of a saskabera (Cobos and Winemiller 2001:284).

2.3.3. Plazas

A plaza is an open paved surface surrounded by structures. Plazas are frequently associated with causeways at both Ichmul and Yo'okop (figure 7). Plaza groups were of central importance to the ceremonial and symbolic design of sites. The plazas are assumed to have symbolized the primordial seas from where the mountains (temples) arose. They usually consist of pyramidal structures, range structures, ballcourts, stelae and altars (Freidel, et al. 1993).

Ringle and Bey (2001:276) suggest a greater focus on the plazas instead of the buildings that surround them. They see the plaza as the real focus for the courtly life, primarily because of the limited space available inside the range structures. The exterior decoration of the buildings may therefore be a background for events that took place in front of them, and may not relate to what went on inside the buildings. Plazas were not a by-product of what was achieved by lining up structures around it, the plaza was the very important area around which buildings were constructed (Ringle and Bey 2001:278). Driver (2002:79) suggests that buildings may have been viewing stands for rituals on the plazas, and not just stages for performances viewed by people in the plaza.

Figure 7. The Great Plaza at Ichmul with the Black Christ sanctuary (left) and the Unfinished church (right).

There are several regional plaza layouts. Ek Balam has an assemblage of buildings that consist of a plaza that on two of its sides are bordered by a pyramid and a "long house". The centre of the plaza often has an *adoratorio* (low radial platform) (Ringle and Bey 2001:278). Ringle and Bey (2001:280) see the "long house" as a popol na. These assemblages of buildings are often connected to causeways and/or ballcourts. Becker also argues that the interest in site plans has

mainly focused on the ranking of size rather than form. He has detected several forms of plaza plans at Tikal (Becker 2004:132). This way of classifying architecture will also be important during my discussion of polyagentive assemblages at Ichmul and Yo'okop.

The plaza floors were often resurfaced, either because of maintenance, rebuilding or a religious agenda related to the calendric order. The plaza floor upon which the Castillo at Mayapan stands was constructed 13 times, possibly every k'atun of a may cycle (Pugh 2001:253; Rice 2004:276).

The causeways at Caracol were primarily used to direct people to open termini plazas surrounded by low range structures. Several of these plaza groups may have housed market locales. There is a large number of households in the neighbourhood which may reflect the roles of the termini as distribution nodes and markets (Chase and Chase 2001a:278). The Great Plaza of Ichmul may very well have been a market place, as could the termini plazas.

Plazas could have substituted causeways in the site cores and other dense settlement (Shaw in preparation-a). In the Nohpat/Yakalxiu plan, the major structures are arranged around contiguous plazas that front a large temple (Dunning 1994:24; 1992:111-114). Similar arrangements have been found at Lubaantun and at Dzibanche (Shaw in preparation-a). *Vía* is Harrison's (1981:281) label for the alignment of buildings in long lines that form alleys (Nalda 2005:232).

2.3.4. Ballcourts

Ballcourts consists of two parallel structures that form a playing alley in-between. The structures have sloping facades used to bounce a rubber ball. The playing alley can sometimes be sunken below the surface of the surrounding plaza. Ballcourts are fairly scarce in the Northern Lowlands. Yo'okop has a high ballcourt, northwest of the northern terminus of Sacbe 1 (figure 8). Ichmul seems to lack a ballcourt, but the modern settlement may obscure its possible presence.

Ballcourts often occur at the end of a causeway, maybe marking the entrance to peripheral complexes or connecting the causeways with the centre (Ringle 1999:210). Therefore, ballcourts were usually placed as mediating structures (Gillespie 1991: 340-342). For example, at Sayil there is a ballcourt at the southern end of the causeway (Pollock 1980:124). In at least one case in the Maya area, the ballcourt is located directly on a causeway. A ballcourt was built upon Sacbe 3, late in the occupation of Yaxuna (Stanton and Freidel 2005:239).

As there are 13 ballcourts at Chichen Itza, Rice (2004:230) believes that they became k'atun commemorating complexes. Another interpretation could be the one launched by Tokovinine who suggests that a drastic political consolidation replaced competitive single group rituals at Chichen Itza. This is believed to be reflected in a new ballgame ceremonialism which emphasized the whole community (Tokovinine 2002). Fox argues that ballcourts were facilities for social integration and places for community rituals. These rituals

Figure 8. The ballcourt at Yo'okop.

focused on competitive feasts financed by the elite. The rituals, ballgames, burning of incense, use of figurines, human sacrifice and feasts are believed to have been used for self-promotion. Thus, ballcourts became stages for the dramatization of status concerns (Fox 1996:483, 493). As such, the ballgame was part of a complex and extended ritual cycle (Miller and Houston 1987).

Reese argues that the triadic ballcourt program at Cerros came to represent a unified community. The ballcourts are oriented north-south and are believed to associate with different events in the creation myth which is reflected in the iconography of the site (Reese 1996:130).

Accordingly, in some research, ballcourts are believed to reflect social and political organization. It has been argued that ballcourts were placed along moietal lines in the Postclassic highlands. For example, K'iche' lineages had spatial positions within the four cardinal directions. The moietal line is assumed to have bisected the ballcourt at Utatlan. The ballcourt at Hacawitz divides two main plazas that were the seats of two different moieties. These moieties adhered to different patron deities. The ballgame tied competitive lineages together and relations between units changed from rivalry to cooperation (Fox 1991:215-220). On a grander scale, it has been suggested that the ballcourt at Yaxkukul, between Ek Balam and Chichen Itza, was a formal boundary demarcation between these two political formations (Smith 2000:34).

2.3.5. Pyramidal temples

Pyramidal structures have a wider base than the top. These consist of layers of superimposed platforms or terraces that diminishes in horizontal extent as the height increases. There is usually at least one stairway leading up to the top. The top level is sometimes crowned by a superstructure of various forms. Yo'okop contains the largest known pyramidal temples of the Cochuah region, reaching a height of 28 meters. The largest pyramid at Ichmul is 12 meters high (figure 9). Pyramidal temples in the Maya area were often located on the edge of a plaza, and sometimes connected to causeways. Shaw (2001g) argues that plazas and temples may have had a similar social integrative function as the causeways. The connection between pyramids and causeways existed already in the Middle Formative. Yaxuna has a 10 meters tall Middle Formative pyramidal structure covered by later constructions. It is in line with a Middle Formative causeway (Stanton and Ardren 2005:225).

Several Mayanists make analogies between how the pyramidal structures are believed to have been conceptualized and how contemporary highland groups relate to mountains, particularly since the word *witz* ("mountain") has been attributed to pyramidal temples (Schele and Mathews 1998; Vogt 1969). Today, the mountain is sometimes seen as a living being. Every tzuultaq'a among the Kekchi has a gender, name and character. Female tzuultaq'as tend to live in large mountains with soft contours and caves. These mountains are associated with rain, rivers, lakes or seas. Male mountains have sharper contours and through their caves come lightning, thunder and earthquakes (Wilson 1995:51-61). Seen in this way, temples with similar forms could potentially have had a gender association (Normark

Figure 9. Structure S2W1-3 at Ichmul.

2000).

There was a great variety of pyramidal temples. Some were funeral temples and others lack burials. Funery temples with remains of bones, believed to be ancestors, were called "root house" (Houston 2000:167; Vogt and Stuart 2005:157). These temples were important in the ancestor veneration. Fire was kindled at these places, a trait which may have come from Teotihuacan (Houston 2000:167). These ancestral pyramids also marked out the owners of the land they stood upon (McAnany 1995).

However, we cannot project the idea that pyramidal temples were used for ancestor veneration too far into the past. What began in one way need not continue to be the same. Joyce argues that the earliest monuments were not ancestral shrines. They gained that function and meaning later on. The earliest form of larger structures in Honduras was broad and quite low earthen platforms. These early buildings may not have changed the landscape but they may have become more durable. The buildings may later have changed the space. The earliest earthen platforms may have been built as supra-household spaces for certain activities, maybe dancing, feasting, etc. The effect of having a raised platform would be that it differentiated spaces within a site and possible differences in knowledge. It also created new visual relations. The earliest traces of burials in architecture were often placed in these earthen platforms. Once the platforms rose in height they became the focal point, which they originally did not have. Then they may have become places for ancestor veneration (Joyce 2004:6, 19-23).

Most pyramids are located on the sides of a plaza. However, there is one particular pyramidal form that is unusual in this sense. The radial pyramid appears in the centre of large plazas, as a centre that joins the four quarters of the world. They have stairways on all four sides, like the Castillo at Chichen Itza. These pyramids have been interpreted as solar observatories (Rice 2004:909). The radial pyramids are not common and could perhaps relate to the may k'u centres. An unusual constellation can be found at end of Causeway 2 at Seibal. There is a plaza with a round platform in the middle, with no other monumental structures surrounding it (Willey, et al. 1975).

The radial pyramids are sometimes connected to E-groups which is an architectural assemblage that emerged in the late Middle Formative. The earliest known emerged around 700-600 B.C. at Tikal. There are known E-groups in the late Terminal Classic or early Postclassic at Nohmul (Aimers and Rice 2006:79-80). In these complexes, a western, and sometimes, radial pyramid stands in front of an eastern platform with three superstructures. Lines of stelae sometimes front this latter platform (Rice 2004:256). It has often been believed that the E-group relates to the sunrise during the equinoxes and solstices. Aveni and others (2003) argue that the alignments of E-groups were used for observing solar zeniths. Aimers and Rice argue that E-groups were not used for precise timekeeping but were used for large-scale rituals related to the solar cycle with different social, political and religious roles through time and space (Aimers and Rice 2006:79).

In any case, the constellation is often associated with the east-west axis of the quadripartite world. An E-group at Yaxuna defines the east-west axis with the East Acropolis whereas the causeways define the north-south axis (Stanton and Freidel 2005:230). The Seven Dolls Group at Dzibilchaltun is similar to an E-group and it is located at the eastern end of a two kilometers long causeway (Andrews 1981). Otherwise, E-groups are rare in the Northern Lowlands.

Rice makes an analogy between the E-groups and the Late Classic twin pyramids at Tikal. Eight of the 9 twin-pyramid groups are close to causeways (Rice 2004:256). These complexes were nodes in ceremonial processions. In this arrangement, the eastern tripartite platform of the E-group was replaced by another radial pyramid, but the front still had stelae (ibid:124).

Guderjan (2006:98) defines what he calls a Pseudo-E-group that has two eastern structures and no western structure. These are located in the eastern Peten.

Another arrangement with pyramids is the triadic pattern which is primarily associated with the Late Formative and the Early Classic. These consist of a large pyramidal structure with two

smaller pyramidal structures on its side/front. Hansen (1998) believes that the triadic groups derive from the E-groups.

Less common are those pyramids that are connected to the sides of a causeway. Villa Rojas (1934) found such structures along the Coba-Yaxuna causeway. The Ichmul-Xquerol causeway has a minor pyramid attached to its east side (Flores and Normark 2004a).

Yo'okop's Structure S5E1-1 has an unusual form, with a pyramid surrounded by a quadrilateral range structure, similar in form to the South Acropolis at Tikal. Wren and others (2001) speculate that water could have run off the pyramid and filled the depression created between the pyramid and the surrounding range structure. There is another sunken plaza directly east of Structure S5E1-1 that potentially could have collected water. This may indicate that the structure was a water shrine. The inscriptions and iconography believed to relate to this structure indicate a connection to the Underworld. The Underworld was believed to be under the sea and this relates water shrines and Underworld iconography. Water shrines have been associated with sunken courtyards at Palenque and Uaxactun. The sunken courtyard at Yo'okop would then embody the Underworld sea within the raised platforms. The two plazas maybe incorporated both high and low water shrines. The sunken plaza is believed to represent a low shrine, used at the base of mountains in the highlands today. The pyramid-temple depression would then have replicated a high shrine used on a mountain top, slope or ridge (Wren, et al. 2001:104). In the highland communities, water is brought from the high-water shrines to purify the low-water shrines. Sacbe 1 at Yo'okop ends just north of Structure S5E1-1. Causeways may have been used in such ceremonies. Schwake (2000:99) argues that a small aguada near the causeway at X-ual-canil in Belize may have been used in ritual processions of this kind.

2.3.6. Range structures

Range structures are common structures at both Ichmul and Yo'okop. They are linear multi-room masonry superstructures (figure 10). They can be vaulted or non-vaulted. If they had vaulted masonry they are usually called palaces that had several rooms. These supposedly elite structures were used as residences and for administration and ceremonies. Since they usually were cleaned, there are only few traces of what went on inside them (Houston 2000:150). The presence of metates, chultuns, and domestic artefacts indicates that most of them were residential compounds (Kowalski 2003:218).

The elite is believed to have preferred vaulted masonry residences for several reasons. They had the advantage of being less susceptible to fire than perishable structures. Stone is also a better regulator of internal temperature than perishable material. The outdoor heat is better absorbed and reduces the transfer of heat into the building. The masonry structures had smaller rooms than the perishable ones which usually had one big room. Smaller masonry rooms made them easy to heat during the night. The masonry substructures were also higher and less affected by flooding and heavy rain. A higher structure allowed more breeze to air through the building. Thatched roofs and dirt floors were likely habitats for disease-bearing protozoa which could be transmitted by insects. Plaster floors and stone roofs reduced these threats. Plaster

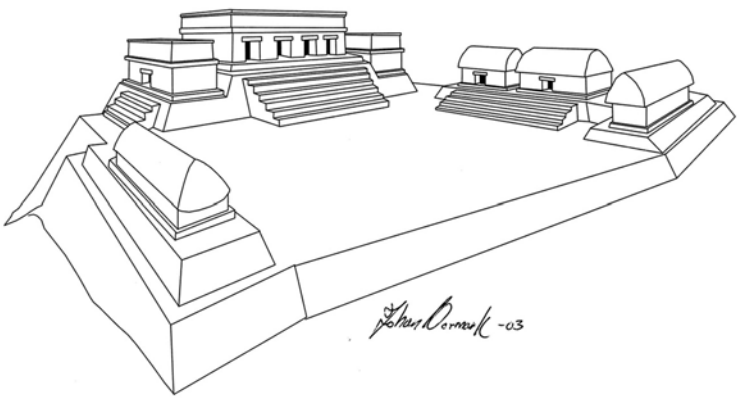


Figure 10. Reconstruction of a range structure and acropolis at Sacalaca.

floors also removed water better than dirt floors (Abrams 1994:32-35).

Late Formative buildings with stone roofs have been found at El Mirador (Structure 34) and Nakbe (Structure 27) (Hansen 1998), and at several structures at Uaxactun (Valdés 2001:140). These Late Formative vaulted structures were small and had few rooms. The number of rooms increased over time which is believed to indicate the growing importance of the ruler. The Early Classic buildings were not only sacred dwellings for the king, but also for the rest of the royal family (Valdés 2001:143).

The Classic period hieroglyphic compound *nah* ("house") was usually used as a term for this kind of structure whereas *otoot* ("home") related to dwelling (Plank 2003). In the modern Yucatec area, the cognate term *otoch* is the place where personal activities take place (Hanks 1990). There are five known otoot at Yaxchilan and they belonged to human beings and not divine beings. Two of these houses belonged to women. Several structures in the Palenque palace are called otoot and one of them was most likely the throne room of the ruler. Other buildings that were associated with this glyphic expression were apparently houses of gods (McAnany and Plank 2001:99-101). However, the emic categorisation of the word otoot also related to boxes. An otoot as a building was apparently not dependent on architectural plan since the emic classification is different from the etic classification of range structure (Plank 2003).

House compounds in the Maya area have often been interpreted as signifying continuity with the ancestors of a social group. Royal houses were given names in inscriptions (ibid). The house was important for the personhood of the human agent because it was a physical place in a social nexus and settlement (Gillespie 2001:92-94).

Like many other structures, houses were considered to be living entities and when they were abandoned, they were deliberately destroyed. Buildings at Chichen Itza, Piedras Negras and Copan have had some of their lintels purposefully destroyed when the sites were abandoned (Golden 2002:84).

The interiors of range structures are relatively uniform in that they usually consist of benches (Martin 2001a:174). The interior placement of benches, walls and steps may be indicative of privacy (Gonlin 2004:241). What the interiors consisted of, apart from the architectural features, is seldom known. However, the site of Aguateca is in a well preserved condition since it was abandoned during war. The centre room of the range structures of the site seems to have been used for meeting and receiving visitors. The few ceramic vessels found in these rooms include storage jars and bowls and vases to be used for food and drink. The centre rooms were also used for administrative work by the head of the household. A large number of metates associated with Structure A7-34 at Aguateca indicate that more corn than was needed for the household was being processed (Inomata 2001:46). Conch shells and bark beaters inside some structures suggest that some were the homes of scribes or even scribal schools (Houston 2000:150). Most vaulted rooms probably had storage facilities on perishable ceiling structures (Webster 2001:148). Courtiers may also have produced ritual and artistic objects in their own houses which indicate that there probably did not exist any specific buildings designed for administrative duties, at least at smaller sites such as Aguateca. This is believed to be in accordance with Landa's much later description of courtiers that did most of the state related affairs in their own houses (Inomata 2001:46-48).

Range structures are the most frequently depicted architectural structures in art and this informs us of how these buildings may have been furnished. Palace curtains of plain and decorated cloth and jaguar pelts were used to seal off a doorway. Mats and pelts covered benches, and large cushions were placed on the top of benches. Wooden boxes and plates, baskets and gourds and portable thrones are also depicted. Depicted structures are sometimes shown with iconic signs which are believed to indicate function and meaning. It is possible that cloth banners covered piers that could be changed depending on the occasion (Reents-Budet 2001:196, 205).

Some range structures had sets of rooms that faced out toward an exterior plaza, such as the

palace at Palenque. These structures may have been used to display wealth to the community such as tribute items or religious paraphernalia (Webster 2001:150). There may have been "presentation palaces" where the participants in public ceremonies could view their ruler on the throne.

The oldest thrones in the Lowlands date to the second half of the Early Classic at Uaxactun (Valdés 2001:151-153). Thrones and chakmools were placed in highly visible locations within important plaza areas at Chichen Itza. The thrones may have been used for tribute presentation rather than used as shrines (Ringle and Bey 2001:278). Some portable thrones are depicted on top of portable captured palanquins (Harrison 2001:84, 100). Such palanquins were probably used on causeways.

Palace-temple pyramids are not common in the Southern Lowlands, although Caracol and Calakmul have such structures. These kind of structures are more common in the north, such as at Edzna, Santa Rosa Xtampak and Sayil (Braswell, et al. 2004:179). The Building II-B palace-temple at Calakmul included culinary activities connected to hearths and metates (Folan, et al. 2001:251). No hearths or burned cooking vessels have been found in the palaces at Caracol. Awls, needles, and antlers found in the palaces indicate specialized domestic activities (Chase and Chase 2001b:132).

One form of vaulted structure is the sweatbath (*pibna*). These were linked to caves and licentious activity (Houston 1996:142). At least one sweatbath is known from Yo'okop (Shaw 2002b). In the contemporary highlands of Guatemala it is primarily used for ritual, curing, and therapeutic purposes, as well as for postpartum and post-menstruate baths (Gossen 1999:16). If they were used for this at Yo'okop is another matter.

Larger range structures seen at other sites are largely lacking at the later Chichen Itza. The gallery-patio structures are characteristic buildings for Chichen Itza. These were earlier believed to be market areas. Lincoln (1990) believes that they were palaces. He shows that many of the florescent and modified florescent buildings are located in the same architectural group. The differences in plan, style, and iconography suggest different functions rather than chronological or ethnic differences (Lincoln 1986, 1990).

2.3.7. Domestic structures

Most structures at both Ichmul and Yo'okop were domestic establishments that include domestic structures, patios and ancillary structures. Apart from houses directly built on the ground, the basic house form had low substructural platforms consisting of retaining stone walls, filled with dirt, stone and debris. On this a rectangular, apsidal, or round superstructure was outlined by a low foundation brace. Four to eight wooden posts were erected and a wattle and daub wall was constructed on the low wall and around the posts. The walls were probably covered by a lime-based wash to protect it from rain. The roof consisted of palm leaves or grass. Roughly 85% of all residences at Copan consisted of this kind of structures (Abrams 1994:22-24). In some cases, they are found near causeways. As already mentioned earlier in this Section, the house and household were the fundamental social units of settlement in the Maya area.

A large household had domestic buildings, shrines, and ancillaries such as a kitchen, workshops, sheds, granaries, *chultuns* (subterranean chambers used for storage) and pens. Hearths are not always inside houses, they can be found in courtyards (Pyburn 1989). This could be the result of different seasons, when cooking took place inside the structures during the wet season and outside during the dry season (Gonlin 2004:239). The domestic structures often surround a courtyard. Courtyards at Copan were sloped so that water could drain. Trees may have existed in and around a courtyard which means that the central area of a courtyard could have been nonplastered so that trees could absorb the water (ibid:74).

Gonlin suggests that the purpose of a building may be found in its original layout. Its use can be found in the artefacts or modifications to the architecture. Therefore, architecture and function best matches if the structure has only been used for a short time (Gonlin 2004:227, 236).

The domestic establishments of the Classic period Copan were inhabited for some 100 to 325 years (Tourtellot 1993:226). However, most people lived in perishable dwellings on the ground level. Most perishable domestic structures probably were fairly short lived. It was probably landless slaves, tenants, servants and workers who lived in the pole-and-thatch houses (Wilk and Wilhite 1991:119). Perishable ground structures are difficult to find in the Southern Lowlands (Marcus 1983a:468; Tourtellot 1983:37). In the Northern Lowlands foundation braces of stone are usually easier to detect.

The settlement that surrounds the end of Sacbe 1 at Yaxuna did not reveal any greater density of structures than other portions of the site (Shaw 1998). This is also true for the settlement between Sacbe 1 and 3 at Yo'okop (Johnstone 2002c), at Coba (Kintz 1983) and at Caracol (Jaeger Liepens 1994:59). Causeways may not necessarily have attracted more settlement. This may indicate that some causeways could not be used by everyone or that they were late in the histories of the sites.

2.3.8. Albarradas

Albarradas are low free-standing walls that divide or enclose space. They are constructed by stones of varying size and are stacked up to over one meter in height without mortar. The foundation layer is usually composed of larger stones set upright. They are common features near inhabited areas. The albarradas associated with the causeways at Ichmul are of Colonial or modern date (Flores and Normark 2004b). They were probably used for boundaries or cattle management, indicating a Colonial or modern resource and land-use. Albarradas sometime incorporate ruins, such as causeways, in defining contemporary land rights, such as those between house lots.

Albarradas encircling contemporaneous Prehispanic patio groups have been found at Yo'okop (Shaw, et al. 2000:31), Chunchucmil, Cob, Becan, Mayapan and at sites along the east coast (Hutson, et al. 2004:77). Nalda (1989:17-21; 2005:237) mentions similar linear features in southern Quintana Roo. Some of these walls defined ancient house lots and milpas. The site of Chunchucmil has, apart from 14 known causeways, albarradas which mark residential units and separate residential structures from civic and religious structures. These albarradas form 2 to 4 meter wide streets, or callejuelas (Dahlin 2000:284). It seems as if the walls did not primarily delimit garden plots since less then ten percent of the house lot was devoted to fertilized gardens. The albarradas may have differentiated private residential spaces from each other (Hutson, et al. 2004:81).

2.3.9. Walls, fortifications and walkways

There are three sets of walls and fortifications at Yo'okop (Shaw, et al. 2000). There is also a possible defensive wall at San Juan, one of Ichmul's termini sites. Its crescent shaped double wall of large stone blocks may have supported a palisade (Flores and Normark 2005e).

Walls are designed to restrict access to certain areas by wholly or partially enclosing them. The enclosure walls in the Northern Lowlands may have been marks of prestige, used to segregate space. These walls may reflect the growing importance of the lesser nobility. The walls may have been symbols of a powerful centre or they may have delimited elite areas or special purpose areas. Some walls at Chichen Itza are surmounted by sculptures, such as along the causeway to the Sacred Cenote (Ringle, et al. 2004:510). The central area of Ek Balam is surrounded by a double wall. The traffic into the centre of Ek Balam passed through gateways and causeways. These walls would not have been good for defence. They did not protect some of the larger architectural groups and there was no permanent water supply (ibid:496, 509).

The Late Postclassic site of Mayapan is one of the few known sites where fortifications were part of the original layout. At other sites, such as Becan and Cuca, fortifications were later additions (Webster 2000:73). Several large Late Formative sites, such as El Mirador and Becan, have

massive fortifications. Becan has a deep and wide ditch, crossed by "causeways" that were bridges of bedrock left after the ditch segments had been dug (Webster, et al. 2004:11).

Roughly 4.5 kilometers north of the Great Plaza at Tikal is a large earthwork, consisting of a deep ditch and an embankment (Puleston and Callender 1967; Webster, et al. 2004). Recent research indicates that the northern earthwork is longer than what had been believed by Puleston (1983). Some of the "causeways" of the Tikal earthwork may be the result from collapsing ditch sides, fallen trees and silting (Webster, et al. 2004:12). Webster and others argue that the earthwork looks more concentric than being one single linear feature. It appears to have been constructed in separate segments and was never finished. The currently known length of the earthworks is 29.6 kilometers. It probably did not have a defensive function, but maybe it framed a political territory (Webster, et al. 2005).

Data from Late Classic sites such as Dos Pilas, Aguateca, Cancuen and Chunchucmil indicate that people constructed low (1 meter high) barricades without palisades, around a ceremonial core in the presence of war (Dahlin 2000). This may be supported by the frescos at the Temple of the Jaguar at Chichen Itza which probably depict earthen embankments that encircle buildings (Ringle 2004).

Common for all sites where such barricades have been found is that they all were abandoned during a war. It is possible that such barricades were quite common, for in most cases the site was not abandoned after an attack and people could restore the site in its original order, which make barricades rare in the archaeological record (Houston 2000). Dahlin (2000) argues that massacres could explain the lack of restoration of these sites. Palka (2001:429) believes that the negative consequences of massacres, such as lack of tribute, made that kind of warfare unlikely. The elite may have been defeated but commoners probably continued to reside in the area. This may not have been the case at Cancuen where at least 31 people never were properly buried (Skidmore 2005). Therefore, the reason why the barricades were not removed may have to do with continued use for other purposes or just pure neglect of the commoners.

Palka argues, from evidence found in the Petexbatun area, that barricades were used to

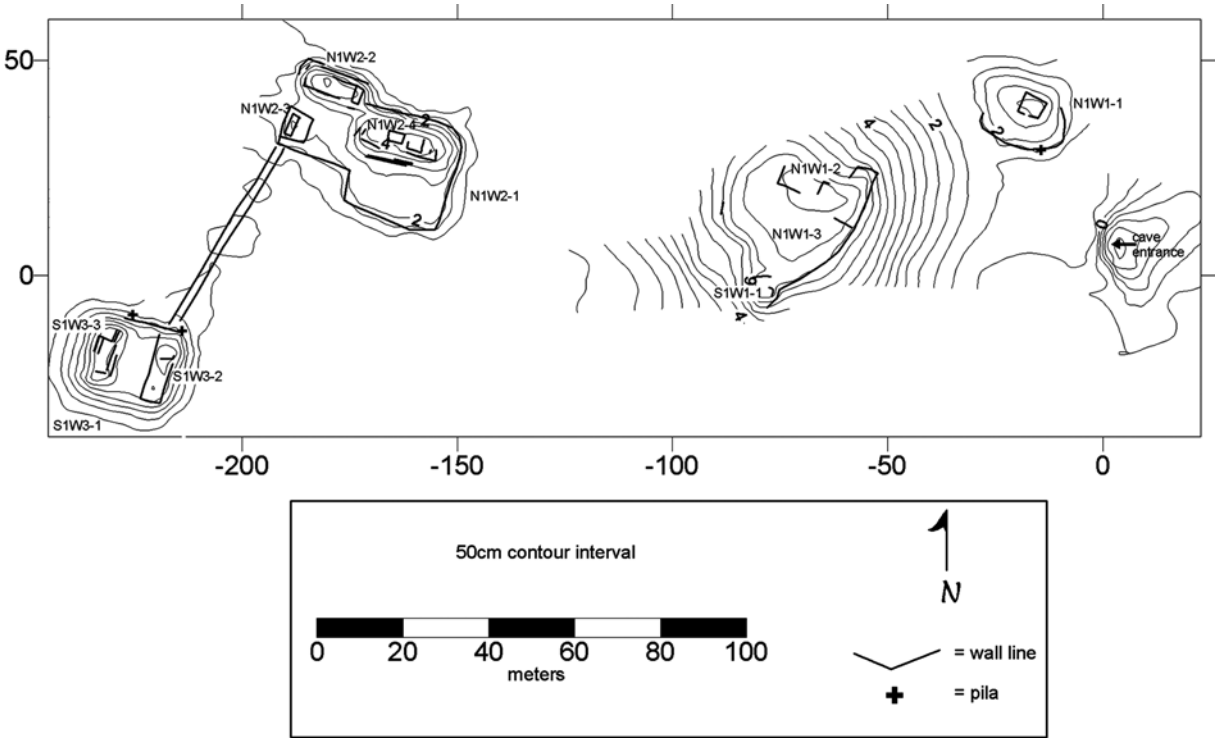


Figure 11. San Pedro Sacalaca.

stabilize a palisade. Barricades were lower on areas of thick soil and higher on bedrock. These were pounded into the ground and connected with trees and thorny plants (Palka 2001:428).

Villa Rojas (1934:198, 205) found earthen ramparts that ran across the Coba-Yaxuna causeway, either built by Coba as they retreated to the east or by Chichen Itza as they moved to the east. Some of them are 40 meters long, 1 meter high and 0.7 meter wide. The walls could also date to the Caste War. The reason why walls sometimes are found on causeways is that the roads provide construction material (Dahlin 2000:287). Other examples of walls on causeways are to be found at Ake (ibid:290), Chunchucmil (ibid:286-288; Dahlin and Ardren 2002:267), Cuca (Garza and Kurjack 1984), Ek Balam (Bey, et al. 1997) and Yo'okop (Shaw, et al. 2000). Some of them are contemporaneous with the settlement.

There are double-faced walls that may have been walkways at Coba. Some are connected to water sources and saskaberas (Fletcher 1983:92-97). Some walls were single-faced and connected to causeways. At El Pilar in Belize there is a long wall connecting the monumental area with a smaller hill-top plaza. The wall has a break in its lowest part and it could have functioned as both a wall, walkway and a dam (Personal observation 2000; Ford, et al. 2001). San Pedro Sacalaca in the Cochuah region has a long wall or a walkway that connects two large platforms (figure 11) (Shaw 2004c).

2.3.10. Stelae and altars

A stela is a free-standing stone slab that is set vertically in the ground. It is either carved or not. Yo'okop has two or three stelae with iconographic and epigraphic details (see figure 81 and 83). Ichmul is less rewarding in this sense, partly due to its exposure to later settlement.

Stela

The Ch'olti'an word for stela was ***lakamtuun*** which means "big stone" or "banner stone". Stelae may have been stone versions of upright standards that were placed in plazas and on terraces (Stuart 1996:154). Not all stelae are carved. These may have been painted or had stucco on them. Another possibility is that they were covered with cloth (Christie 2005). Despite the transliteration of lakamtuun as "big stone", Christie (2005) argues that stelae were symbolic "trees" as has been argued by Schele and Freidel (1990) and Newsome (2001).

The word ***baah*** ("self, forehead, person, image") is sometimes found on stelae. Houston argues that this was an extended notion of personal essence for rulers and this could imply that stelae were statements for the permanent presence of rulers (Houston 2000:166).

The texts on stelae and other sculptures emphasized dedications of the sculpture or calendrical events (ibid:169). The dedication of Stela 3 at Machaquila is called the "wrapping" of the monument. The stela was "seen" 220 days later. Stela 7 at the same site was "seen" 35 days later by the king himself. The stone was probably erected uncarved and carved in situ (ibid:154).

Thirteen stelae have been found in an E-group at El Mirador (Matheny 1987). Oxkintok had 13 sculptured stelae from the Terminal Classic (Rice 2004:225). Mayapan had at least 13 sculptured and 25 plain stelae. This, Rice (2004) uses to support her may-cycle (13 k'atun) model but the constellation of 13 stelae are not known at many sites.

In some cases stelae have a relationship with caves. Yaxchilan has a large carved speleotheme raised as a stela in front of a temple (Tate 1992:132). Unusual forms and locations of stelae have been found inside some caves. These are smaller than surface site stelae, they lack inscriptions and they are located in distant chambers. Aktun Tunichil Muknal in Belize has two vertically set slate stelae with speleothemes placed at their base. One stela resembles a stingray spine and the other an obsidian blood letter. In the Chechem Ha cave there is a stela encircled by a stone ring (Awe, et al. 2005:227-233). The Balankanche Cave in Yucatan has a large rock with artefacts surrounding it (Andrews 1970:12). The Naj Tunich cave in Guatemala is believed to have a stela/altar complex

(Awe, et al. 2005:239).

Stelae were also used for veneration after the sites were abandoned. Hammond and Bobo (1994), show that stelae at La Milpa were transported from their original place to new places, where they were venerated. The Early Classic stelae at Yo'okop appear to have been removed from their original location, but probably during the Terminal Classic.

Stelae have sometimes been found close to causeway termini. King *Waxaklajuun Ubah K'awiil* of Copan placed his accession stela (J) at the end of the causeway leading to the ward that Viel believes belonged to his lineage (Viel 1999:395). This may indicate that both the causeway and the stelae were part of the framing of a social group. Sacbe 1 at Xunantunich had two small stelae placed at the thresholds where the causeway joins the plaza areas. They seem to have been boundary markers (Keller 1994).

The stelae in the Northern Lowlands were often erected at the termini or associated with causeways (Rice 2004:221). Most stelae at Uxmal, Sayil, Itzimpte, Yaxche Xlapak and Yaxhom stand on a stela platform (Carmean, et al. 2004:429). Sayil has a low platform (Structure 434) located on the causeway just to the north of the ballcourt. On it stands eight stelae and at least seven altars. This structure faces towards the ballcourt (Rice 2004:224). The stelae at Dzibilchaltun stand on platforms near the causeways or on the causeways (Andrews and Andrews 1980:232-240). Stelae have also been found on platforms placed within the cruciform causeway system at Seibal in the Southern Lowlands (Tourtellot, et al. 1992:94).

Altar

Yo'okop has four Classic period altars and Ichmul may have one (Flores and Normark 2005a; Shaw, et al. 2000). Altars earlier than the Postclassic period are often rounded and usually associated with stelae. It is uncertain whether these actually were altars in the modern sense or if they had some other function. The vertical stela resembles a bar which is number five in the numeric system used in the Maya area. The round and horizontal altar resembles a dot, which equals number one. Both together create number six. Among contemporary K'iche', "Six-place" (*wakibal*) is the place where ancestors dwell (Tedlock 1992). Number six ("wak") is a root of the word for the axis mundi (Wakah Chan), sometimes associated with the world tree (Freidel, et al. 1993).

Contemporary Yucatec altars are used to create a "road" between earth and cosmos. Spirits from the cardinal directions are lowered down to the altar through rituals (Hanks 1990:336). During the Postclassic period, merchants burned copal to their protector Xaman Ek on an altar on the side of a road. Merchants also performed rituals to the merchant god Ek Chuah before they travelled (Tozzer 1966:95, 107).

There are two forms of altars associated with causeways, those built when the causeway was in use and those constructed afterwards, usually during the Postclassic. The Postclassic altars are small, square and connected with Postclassic shrines. An altar used when the causeway was in use can be exemplified with the terminus of Sacbe 3 at Xelha (Witschey 2005). Another example is the Early Classic round altar that was later reset on the Terminal Classic Sacbe 1 at Yo'okop. However, this event could also date to the Postclassic (Shaw in preparation-a).

2.3.11. Stairways, ramps, arches, bridges, boundary stones, resting places and carvings

Some causeways lay at a lower level than the monumental architecture, connected with plazas and temples by ramps. The ramps in the causeway system of Coba consist of four principal types: (1) Some ramps are associated with architecture that may have been administrative buildings, maybe customs check points. (2) A few huge ramps without architectural associations are found near the terminus of some causeways. (3) Some ramps have been constructed over high points along the causeway route or they provided access to a cenote. (4) Sacbe 3 and 1 intersect each other with a four-way ramp with an associated stela fragment and a small Postclassic shrine (Folan 1991:222).

The Uxmal-Nohpat-Kabah causeway has ramps and stairs where the elevation changes (Carrasco 1993:201). Sacbe 2 and 5 at Dzibilchaltun have steps (Coyoc and Uriarte 2003). Steps have also been found at two places along the Ichmul-Xquerol causeway (Flores and Normark 2004a). Stairways on other structures, such as pyramidal temples and range structures, were also used for tributary displays. Houston (2000:174) suggests that stairways could be seen as stationary points rather than as entrances to and exits from structures. At some places the stairways themselves became surfaces for inscriptions. The most famous one, the Hieroglyphic Stairway at Copan, has a temple on top which was dedicated to the ancestors (Webster 1999:17). Yo'okop's structure S5E1-1, directly south of Sacbe 1, is believed to have been a water shrine which may have had a hieroglyphic stairway that would have faced the causeway (Wren, et al. 2005).

The Bryan and Murphy causeway ramp at El Pilar might have been part of a water management system (figure 17). Collected water on Plaza Copal flowed down the ramp and was kept on the road bed by its parapets (Ford, et al. 2001). El Mirador has substantial breaks in four causeways. These breaks could have been used to let water pass by (Dahlin 1984; Scarborough 1993:31). Bridges may have been used to cross the breaks (Shaw in preparation-a).

Arches on top of causeways have been found in the north, such as at Muyil, Coba and Kabah (Shaw in preparation-a). At Chichen Itza, some causeways have portal vaults that probably indicate the beginning or end of a causeway (Cobos 2003:220-224, 244).

Along the Coba-Yaxuna causeway, Villa Rojas found *mojoneras*, believed to be distance markers or boundary stones. These are 2 meters long, 1.5 meters wide and 0.5 meter tall. The first preserved is eight kilometers from Yaxuna. Their dates are not known. However, in the fifteenth century, the causeway worked as a boundary between the Cochuah region and the Cupul region. More recently, it has also been the boundary between the villages of Tekom and Dzitnup (Villa Rojas 1934:197-207). *Multunoob* and mojoneras are used to delimit areas of land in contemporary Maní. Large piles delimit land with different ownership, and small piles delimit *mekates* (an area of 20 x 20 meters) within a property (Forrest 1997:125). People may reuse the piles when they lay out a new milpa after it has not been in use for a decade or more. A milpa is cut as a path around the four edges of the plot. It is laid out near an existing path. Milperos tend to leave two to three meters of uncut forest on both sides of the path to provide shade and construction material. This corridor of vegetation is often taller than the secondary forest since it has not been deforested for some time. Directions are often given to cenotes by using the multunoob that mark distances on roads (ibid:209, 213).

Resting places (luub) have been located at crossroads and beside long causeways. Such a crossroad is between Sacbe 8 and 13 at Coba. This resting place has one large flat stone. There are also isolated platforms along the side of the Coba-Yaxuna and Coba-Ixil causeways that may have been resting places or locations for rituals (Robles 1976:35; Villa Rojas 1934:205).

Some causeways in the Upper Belize Valley have a small platform at the end of the parapet. Schwake argues that it was used for a limited number of people viewing other people in motion. Structure 14C at X-ual-canil would have been such a structure (Schwake 2000). At El Pilar, there is a structure just beyond the western end of the northern Bryan and Murphy causeway parapet. This could be a similar one as at X-ual-canil (Ford, et al. 2001).

Six inscribed monuments have also been found, between 6 and 15 kilometers from Coba (Villa Rojas 1934:197-207). All of them are believed to contain the hieroglyph for sakbih (Stuart 2006). The Maler causeway at Tikal has a large Late Classic rock sculpture which depicts two bound captives that celebrate Tikal's victory over Naranjo in A.D. 744 (Grube 2000:261).

2.3.12. Postclassic shrines and altars

Postclassic shrines are common at Yo'okop and Nohcacab. They are of various sizes, but all shrines are considerably smaller than the Classic period pyramidal temples (figure 12). Yo'okop has a small Postclassic shrine on Sacbe 1 (Shaw, et al. 2000).

Figure 12. A Postclassic shrine, on top of an older building, and an altar at Nohcacab

Depictions of shrines in the Postclassic codices show house-like structures for a deity to dwell in. The depicted deities may also have been idols, such as ceramic effigy censers (Lorenzen 2003:26-27). Lorenzen (2003: xiii) argues that the Postclassic miniature shrines were related to subsistence rituals connected to ancestral veneration. This also included caves that were the source for fertility and divine power. These structures seem to have focused on promoting rain, agriculture and game. The shrines may have been constructed by newly settled people for the establishment of land rights by referring back to the previous occupants who became regarded as ancestors (ibid).

Smashed ceramic incense burners in effigy form are often found around the shrine doorway (ibid:2). Evidence from Naranjal (ibid) and Muyil (Witschey 1993) indicate that effigy censers were used in ceremonial processions along and between causeways, sites, shrines and water features (Lorenzen 2003:55). The Early Classic Structure 6E-13 at Yaxuna is a three meter high mound located at the terminus of the Late Classic causeway from Coba. It supported a Postclassic altar (Shaw 1998:96). Shrines or small Postclassic temples and the contemporaneous causeways were in close association with each others on Cozumel (Freidel and Sabloff 1984:79-84). The causeways on Cozumel appear to have been laid out to connect the shrines and to be used in ritual processions and pilgrimage.

2.3.13. Artefacts

As with most causeways, apart from ceramic sherds used as construction fill, not many artefacts can be associated with the causeways at Ichmul and Yo'okop. The presence of ceramic sherds of local or long-distance origins may indicate trade routes, but these probably did not went along the causeways.

One ceramic distributional pattern that may relate to causeways is that ceramics affiliated with Chichen Itza could have been restricted to some people at Dzibilchaltun. These ceramics tend to be found near the causeways (Rice and Forsyth 2004:46). Keller (1994) mentions a possible ceramic vessel at Xunantunich which she believes once stood upon one of the parapets of the causeway.

The most obvious "artefact" associated with a causeway is the 4 meters long, 0.7 meter thick, and 5 tons heavy stone roller that was found in two pieces on top of the Coba-Yaxuna causeway. It was probably used to compress saskab (Villa Rojas 1934:199). Shaw (in preparation-a) suggests that a trunk of a large tree was used in most cases.

2.3.14. Agriculture

Farmlands existed at both Ichmul and Yo'okop. Since they were agriculturally based social formations, it is necessary to understand how the most important and common activity formed the rest of the social formations and how this in turn affected the layout of causeways. The present landscape surrounding Ichmul and Yo'okop is largely a Colonial creation. Whitmore and Turner (2000) argue that the landscape of the Maya area went through three distinct phases in the early

Colonial period; depopulation, introduction of other biota and technologies, and the reordering of the rural economy. Thus, there is a problem with using current agricultural patterns to explain the past. In addition, there are plenty of regional palaeoecological studies that question the tendency of projecting contemporary environmental variables into the past (Dahlin, et al. 2005:231).

Agriculture in the Lowlands is likely to have originated between 3500 and 1900 B.C. This is indicated by large-scale forest clearance from slash and burn activities in northern Belize (Hester, et al. 1996:48). Around 2500 B.C. there was a rapid deforestation of northern Belize and this has been attributed to the spread of maize agriculture (Pohl, et al. 1996:368).

The earliest use of ceramics in the Northern Lowlands dates to around 700/650 B.C. at Komchen. This has been used to argue that people in the north became sedentary agriculturalists later than in the south. Stanton and Ardren (2005:214) argues that people of the north chose not to adopt agricultural activities and ceramics until the later Middle Formative rather than being immigrants from the south.

Soils in Yucatan are highly variable depending on topography, rainfall, age of the soil, organisms within and on top of the soil and organic materials. The soils are seldom thicker than 0.2 meter (Dunning 1994). The surface is often bare limestone, covering up to 50% of the surface (Ringle 1985; Wilson 1980). For example, Chunchucmil lies in a soil-less location. Great volumes of organic manure may have been imported from the coastal savannas (Beach 1998; Dunning 2004).

Organization of agriculture

There are great differences in the various explanations of how agriculture was organized between elite and commoner during the Classic period. There is little evidence for large-scale agricultural techniques around centres (Lucero 1999:224). No state-directed subsistence system was needed in the Lowlands and most sites were probably self-sufficient when it came to subsistence. Agriculture was a mixture of techniques in small units that were adapted to eco-niches. It was important to have several non-contiguous plots in different edaphic places to minimize risks, such as powerful local rain (McAnany 1995:79). Farmsteads were dispersed since they utilized fields between the households (Drennan 1988). Local populations might have been able to subsist with milpa agriculture and strategies that are difficult to find archaeologically (Lucero 1999:224).

Numerous small storage facilities, rather than a few large or centralized ones, could be one explanation for the "weakness" of Late Classic social formations. Dispersed storage was, on the other hand, a good thing during warfare since the enemy would not have a conclusive target to capture food (Tourtellot 1993:223). Therefore, transport of food was limited to the local level. For example, the Uxmal-Nohpat-Kabah causeway is believed to have had storage features associated with metates (Carrasco 1993:204). However, Pyburn and others (1998) claim that the dense and centreless settlement on Albion Island in Belize was the result of colonizing by a large social formation, maybe Tikal. In this case, some storage facilities must have existed in between these areas.

However, as a contrast to assumptions that elites were not involved in local agriculture, settlement at Sayil seems to have been kept within demarcated limits. It is believed that the fields were under the jurisdiction of elites. There was no settlement in the countryside. Instead there were small, nucleated outlying centres with chultuns, believed to be under the control of the same elites (Carmean, et al. 2004:440).

Healy and others (1983) have found evidence for intensively used terraces near Caracol in Belize. The extended causeways at this site sometime relate to these agricultural areas. Hills were sometimes cut away to form the causeway and several causeways are hardly distinguishable from the agricultural terraces they superimpose (Chase and Chase 2001a:273). At other places, terraces have been found on sloping areas, where they served as retaining walls to catch washed-down

fertile soil. Fedick (1994:124) argues that terraces were constructed to consolidate the most fertile land resources. Although terraces are common, their labour investment is far from that of agrarian social formations found in other parts of the world (Inomata 2004:182).

An unintended outcome of Sacbe 3 at Yo'okop is not only that it accumulates soil along its western side, but also that the road blocks off subterranean water drainage as it seeps from the higher level in the west to the lower level in the east. This results in a higher degree of moisture on the western side of the causeway. Modern milperos say that it is better to farm on this side than on the drier eastern side (Johnstone, personal communication 2003; Normark 2004c). This was most likely not the intention of the builders.

Agricultural techniques

Agriculture is dependent on weeding, protection from pests, harvesting and storage activities that take place at different times of the year. Classic period farming in the Maya Lowlands also consisted of several different techniques. House gardening, short-fallow infield, long-fallow outfield, terraces, dams, canals, raised fields and drainage systems have all been found at different sites. The variability depended on climate patterns, soil material, workability, root zone, drainage, slope and erosion (Fedick 1995a, 1995b, 1996).

Some researchers believe that kitchen gardens, agroforestry, multicropping and nearby infields close to the household was the general form of cultivation since they could support a larger population (Wiseman 1983:149-151). There are several intensification strategies which may have been used at various sites, such as; maximizing ground space and space-saving by polycultural gardening (distribution of crops vertically). *Chich* mounds may be the remains of foundations for trees used to conserve moisture. The soil was fertilised to improve phosphorus in the soil by mulching household wastes, composting and bringing soils and organic material from other areas, such as wetlands (Dahlin, et al. 2005:237-239).

The settlement pattern makes it possible that the farmers also used swidden agriculture, or *milpa* farming (figure 13) (Rice 1993:33). The estimated carrying capacity of swidden agriculture is 77 persons/km^2 (Harrison 1990:99). A pre-conquest milpa of roughly 0.8 hectares could support one person. This size was called *hun winik* ("one man") (Forrest 1997:115). Alexander (2004:112) argues that the Colonial period farmer's plot was between 60 and 100 mekates (2.4 to 4 hectares). These were in fallow during 4 to 10 years. Thus, the residential mobility may have been high, every 3-4 years to find fertile soils (Lucero 1999:224). There might also have been seasonal mobility (Ford 1986).

Figure 13. Milpa near San Andres.

A dispersed settlement occurs if labour resources are concentrated into farming since people want to live near the fields. The presence of many small open areas between house mounds may therefore indicate that there was a widespread intensification of agriculture, such as labour-intensive gardening (Tourtellot 1993:221). High phosphate levels in vacant spaces around house mounds in the hinterland of Xunantunich may be indications of this kind of agriculture (Lucero 1999; Robin 1999). The largest

tracts of open spaces at Sayil were close to the elite houses. Ceramic distribution is believed to indicate that the elite controlled the largest and most fertile tracts. Many small garden plots were probably owned by commoners (Smyth, et al. 1995:339-341). Such relic infield gardens have been located by absence of artefacts and elevated soil phosphate levels. Outfields in the extra-urban region have depleted phosphate levels, which may be the result from the lack of organic fertilizing (ibid:327). This kind of agriculture seems to have taken place in the flat areas at Yo'okop, since the settlement reflects a "garden city" pattern (Johnstone 2002c:11).

A form of agriculture not found in the Cochuah region is wetland agriculture. It is generally found in the Southern Lowlands. Evidence of wetland farming in the Northern Lowlands has been found in the Yalahau region and it dates back to as early as the Late Formative (Fedick, et al. 2000). The largest sites in the Yalahau region are furthest from the wetlands with small sites close to the wetlands. This is believed to represent a dendritic extraction network (Glover and Esteban 2005:62). However, there is less evidence for wetland agriculture than once thought. Some of the so called raised fields have turned out to be natural features. Seasonal wetlands with fertile soils were probably cultivated but not the perennial ones. Permanently inundated wetlands could only be exploited if they were cultivated. The soil structure of the wetlands could retain some moisture through the whole or the earlier part of the dry season. The majority of the bajos have clayey soils and they would have been difficult to use for constructing raised fields (Lucero 1999:220).

Deforestation

The modern forest is the result of a recovered forest from past farming activities since most of the forest is believed to have been transformed into a savannah-like landscape by the Terminal Classic. This may have been contemporaneous with a drier climate (Brenner, et al. 2002:145). Deforestation initiated soil erosion which led to soil-nutrient depletion. This resulted in the silting in of rejolladas, bajos, aguadas and lakes. Late Classic terracing in the Pasion river drainage were created to reduce soil erosion (Dunning, et al. 1997). Stone terracing, dirt and vegetative banks were constructed to prevent the soil loss in sloping areas (Fedick 1994:124).

Deforestation occurred because the wood was needed for agricultural, habitational, cooking and heating purposes. The production of plaster also needed firewood, which has been one explanation for the deforestation at several sites. However, the deforestation for the purpose of manufacturing plaster may have been exaggerated (Abrams and Rue 1988:377; Wiseman 1983:151-153).

The deforestation led to accelerated soil and nutrient loss through erosion. The increasing amount of architectural features, such as causeways and plazas, increased the removal of soil and downhill deposition. Well-drained and fertile lands were also removed from production (Rice 1993:29-31). Thus, hydrology and erosion were altered by the built-up environment (Tourtellot 1993:223). This would have been an issue at Yo'okop. Group A lies 20 meters above the aguada, which has been silted up by downhill deposition in later periods. The only known water source of the site was therefore affected (Shaw, et al. 2000). Soil removal owing to increased development of inhabited areas may have been one cause for the later depopulation, although most households were located on bedrock in the Northern Lowlands.

Shaw argues that anthropogenic deforestation explains the mosaic of climate change. This deforestation raises temperatures and decreases evapotranspiration at a local level. A cleared forest means that less humidity is absorbed from the soil surface and the temperature rises. Wind replaces saturated air with drier air and a drought could occur. The human-created microclimatic changes, different farming techniques, water management and resource availability made some sites more vulnerable than others (Shaw 2003a:157, 161).

2.3.15. Water

Maize needs at least 500 mm of rain during the growing period (Wellhausen 1957). Rain falls between May and September, but a large percentage of this rain soaks into the limestone and evaporates (Dahlin, et al. 2005:234). Thus, owing to the karstic geology, surface water is not common, particularly during the dry season. This is crucial in whole Maya area. In the south, people modified the landscape to take advantage of and use water in reservoirs and local watersheds. Local reservoirs permitted people to collect water and the size of the village partially depended on the size of the reservoir(s) (Scarborough 1993).

For the north, where the hills are few to direct water, there are other water sources, such as cenotes. There is a large aguada in the centre of Yo'okop (Shaw, et al. 2000). There is no visible water source in central Ichmul, apart from one *haltun*. Based on early Colonial textual sources, it is assumed that two cenotes existed in Prehispanic times, but these may have been covered up by Colonial architecture (Flores and Normark 2005b).

If agriculture had a decentralizing effect, water is believed to have been a centralizing force in the Maya area. Scarborough (1991) argues that since water management features were constructed in a short time they are better indications of elite authority than monumental architecture (Davis-Salazar 2001:192). The elite needed to control not only a dispersed and self-sufficient population but also a mobile one (Drennan 1988; Ford 1990; Lucero 2002; Santley 1990). Lucero argues that farmers were mobile and that they moved to stable water sources (Lucero 2002:816).

The largest centres in the Southern Lowlands developed in areas with seasonal lack of surface water. Large reservoirs were dug near the monumental core or had originally been quarries for these buildings. Plazas and other architectural features, such as causeways, were used to direct water into these aguadas. Therefore, it is assumed that the control and management of water was one of the primary means in controlling people (Davis-Salazar 2001; 2003; Lucero 2002; Scarborough 1983, 1993, 1998; Scarborough, et al. 1995). Other research indicates that centralized water control not always was important for commoners. Small household-related aguadas or chultuns helped to maintain the water supply (Weiss-Krejci and Sabbas 2002).

The largest sites in the Northern Lowlands are close to aguadas or lakes (Chichancanab, Coba, Punta Laguna, San Jose Chulchaca, Sayaucil and Yalahau) (Shaw and Johnstone 2001:9). These water sources would not have been enough to supply agriculture in the hinterland, but they could support adjacent populations during the dry season. The dependence on centralized water control may have been exaggerated by archaeologists working in the Northern Lowlands. Large water jars could have been used to collect water (Johnstone, personal communication 2004). However, water was probably still important in rituals and in petitions for rain. Fry argues that the presence of limited water sources in Yucatan made the water source a larger-scale public domain which would have encouraged the use of higher-quality vessels as status markers (Fry 2003:89).

Figure 14. Haltun in Ichmul.

Water sources

The main source of water in the Northern Lowlands is the cenote which made it easy to collect

water (figure 5). Cenotes are not dependent on rainfall since they rely on freshwater within the limestone substrate (Robles 1958; Tamayo and West 1964; Ward and Wilson 1985; West 1964; Wilson 1980). The freshwater lens under Yucatan has a maximum thickness of 70 meters and lies on top of saltwater (Back 1985). Therefore, changes of the sea level may have affected the access to water (Dahlin, et al. 2005:235). Curtis and Hodell (1996) argue that even though the Northern Lowland is drier, the Terminal Classic drought affected the south more. The water table of the south is farther below the ground surface and is more dependent on surface water reservoirs (Shaw 2003a:160).

Figure 15. The aguada at Yo'okop.

Haltuns are natural hollows in rock that may be filled with rainwater (figure 14) (Pearse, et al. 1936). *Aguadas* are manmade or sometimes naturally created water reservoirs (figure 15). Both haltuns and aguadas need regular local rainfall to refill. Aguadas were in many cases former quarries sealed off with plaster or clay (Dahlin 1986; Shattuck 1933). The natural aguadas were originally sinkholes which have been filled with sediment and organic debris (Tamayo and West 1964). At Chunchucmil saskaberas also contain water (Dahlin, et al. 2005:235).

In the Yucatan area, constructed aguadas were often placed in or close to large sinkholes without water (Siemens 1979). Rejolladas are sinkholes that have moister and deeper soils than areas surrounding them and they are therefore good for cultivating plants, such as cotton or cacao (Kepecs and Boucher 1996). *Dzadze* is a partially or seasonally inundated rejollada (Ringle, et al. 2004:506).

Chultuns (figure 16) are manmade pits and have variously been interpreted as latrines, limestone quarries, fermentation chambers, sweatbaths, weaving chambers, burial chambers, food storage containers and water cisterns (Weiss-Krejci and Sabbas 2002:349). However, they are sometimes found associated with water management features. Some have been found at the base of naturally fed drainage canals where water would have been collected (Scarborough 1983:727). For example, at the end of Sacbe 10 at Calakmul is a structure and a platform associated with a chultun (Folan, et al. 2001:296). The northern chultuns were sometimes covered with a thick plaster coating so that water would not leak out (Weiss-

Figure 16. Chultun at Nohcacab.

Krejci and Sabbas 2002:351). Farmsteads that lack chultuns in the Puuc region may only have been used during the rainy season (Dunning 2004:105).

Wells were not common before the Colonial period. There are some wells at Chunchucmil. They were easy to excavate since the water table was high (Dahlin, et al. 2005). Around Ek Balam, wells were sometimes excavated in rejolladas (Ringle, et al 2004:506). Two Prehispanic shallow wells (little more than 4 meters deep) have been found in the Three Rivers region in north-eastern Guatemala and north-western Belize. These are found in rural areas. A 7 meters deep well has been found at the site of Los Angeles in southeast Campeche (Robichaux 2002:343).

Water management

Davis-Salazar defines water management "as the tasks (both ritual and functional) involved in the use of artificial and/or natural water sources. These tasks include, but are not limited to, planning, construction, collection, allocation, distribution, cleaning and repair, conflict resolution, as well as ritual" (Davis-Salazar 2003:279). Most of the water management studies focus on consumption and the use of water in agriculture.

Evidence for early water management in the Southern Lowlands, dated to around 1000 B.C., has been found in Belize. Most Late Formative sites depended on concave micro-sheds in which the water moved from altered settings into well-managed low lying settings. There is no clear evidence that an elite controlled water management during the Late Formative. This is used to explain why the large Late Formative site of El Mirador was abandoned, or at least had some disadvantage due to the build up of silt in the aguadas (Lucero 1999:235). However, it is also likely that the aguadas silted in due to the collapse of the royal power, maybe as a result of warfare (Scarborough 1993:41).

During the Classic period, the focus switched to upland landscaping and convex micro-sheds. The larger Early Classic settlements emerged in the uplands, usually close to bajos. It seems that the immediate bajos no longer were attractive, probably due to the rise of the water table and increased sedimentation (ibid).

The people of Tikal modified a limestone hillock into a "water mountain", from where water was collected through a network of plazas, stairs, culverts and causeways and led water into large reservoirs. The kings produced a water source larger than had earlier been possible (Scarborough 1998:143). By placing aguadas close to the largest architecture, the rulers used rituals that were derived from the use and availability of water. Thus, water is believed to have been used by the elite to secure and maintain their power through rituals. The Classic period rulers used these aguadas to control power and it became an integral part of their iconography. Scarborough points out that large reservoirs near large structures also functioned as reflective surfaces. The reflecting image mirrored a parallel world from where ritual specialists could have conjured spiritual forces (Scarborough 1998:151), particularly from the Underworld, or the "other side of the sea" (Sachse and Christenson 2004).

Calakmul's largest reservoirs cover an area of five hectares. The reservoirs could supply 50,000 to 100,000 people every year (Braswell, et al. 2004:165-166). The six central-precinct tanks at Tikal could have received 900,000 m^3 water in a year. However, the combined storage capacity must have been scheduled through releases of water during the dry season through the sluice gates under the causeways (Scarborough 1998:137-141). There is a drainage channel from the Mundo Perdido group at Tikal where three check dams were constructed to slow down the water flow (Scarborough, et al. 1994:101). The water flowed into four sizable aguadas, roughly located in the cardinal directions. For domestic use, there were small aguadas scattered across the landscape, some of them were refilled by the water from the central tanks. Since the farmers of the fertile land had access to water all the year, two or three crops could probably have been harvested annually (Scarborough 1998). In addition, Tikal had at least 65 small depressions believed to have been used

for water collection (Weiss-Krejci and Sabbas 2002:344).

The larger water management system could also have a connection with the water and soil management arrangements on a house-lot gardening level. Modifications of the limestone bedrock were used to facilitate drainage of excess moisture during rain and to retain moisture during drier periods (Lohse and Findlay 2000:175). Water conservation features have been found in the drier Northern Lowlands. Rejolladas, other naturally damp depressions, and chich mounds of piled stones could have stabilized and conserved water around trees (Beach 1998; Kepecs and Boucher 1996; Shaw 2003a). Evaporation from smaller depressions could have been reduced by using covers (Weiss-Krejci and Sabbas 2002:353), or having large trees that gave shade.

The management of water sources was crucial for the power, community and cosmology in the Maya area. Standing water can become stagnant and generate conditions for insects and parasites. It can also create noxious chemicals, such as nitrogen (Lucero 2002:815). Water lilies are found in clean standing water and could have been used in reservoirs. These plants decrease evaporation, recycle organic material and create an environment for invertebrates (Harrison 1993:105). Water lily symbols have been interpreted as the royalty's ability to provide clean water (Lucero 1999). During the reign of Copan's Ruler 16 (*Yax Pasaj Chan Yoaat*), nonroyal elite began to use water imagery (Fash 2003). Minor centres along rivers do not have any obvious watery imagery and these sites were occupied long after larger centres collapsed (Lucero 2002:820).

Many Mayanists use Vogt's (1969) ethnographic work of the community of Zinacantan as a model for the relation between water sources and social organization and rituals. All lineages from a water hole group at Zinacantan share a *k'in krus* ceremony. This takes place at a cross shrine near the water source. It is part of a wider ritual circuit that is performed for the ancestors who found the water sources. This ceremony strengthens the social bonds as it creates a social and spiritual communication. The water holes define the moral, and the usage of the community (Davis-Salazar 2003:281).

The importance of water is also clear in Yucatan. Forrest believes that the Spaniards tried to break the association between water, the centre, *Kukulkan* and the rain gods at the site of Maní. They did this by constructing water sources other than the cenote. They Christianized Maní's water sources, giving wells the names of saints. The new wells were thus given Christian names and Christian identity (Forrest 1997:94). Ichmul may have had one or two cenotes in the centre of the causeway network, which today is in the centre of a church and monastery complex. This seems to have been the old centre that the Spaniards attempted to break. Although no Postclassic remains are known from Ichmul, the centre of the triadic causeway system may have been an important pilgrimage site during this time. Colonial wells are found within the monastery that surround this central location. It is possible that similar activities took place at Ichmul as at Maní. The monastery took over the cenote and made new wells that probably were Christianized.

Causeways in water related activities

Some causeways were connected to the management of water in one way or another. Causeways were raised to provide dry passage in wetland areas and others channelled and collected water (Folan 1991; Scarborough 1998). Shorter causeways were more likely to function within a water management system. The site core causeways at Tikal and Cerros were also used as dams (Bolles and Folan 2001:299). Causeways at Coba and El Mirador have also served as dikes. Some causeways at Coba have narrow culverts which make it possible for water to run from one side to the other (Folan 1991:222-224). Four of El Mirador's six major causeways have 300 to 600 meters gaps that could have been constructed to let water pass through (Dahlin, et al. 1980:41-48; Scarborough 1993:31). X-ual-canil's causeway in western Belize, has drainage features that lead to agricultural fields (Schwake 2000:98).

Water collected on Plaza Copal at El Pilar in Belize probably ran into a nearby aguada and down

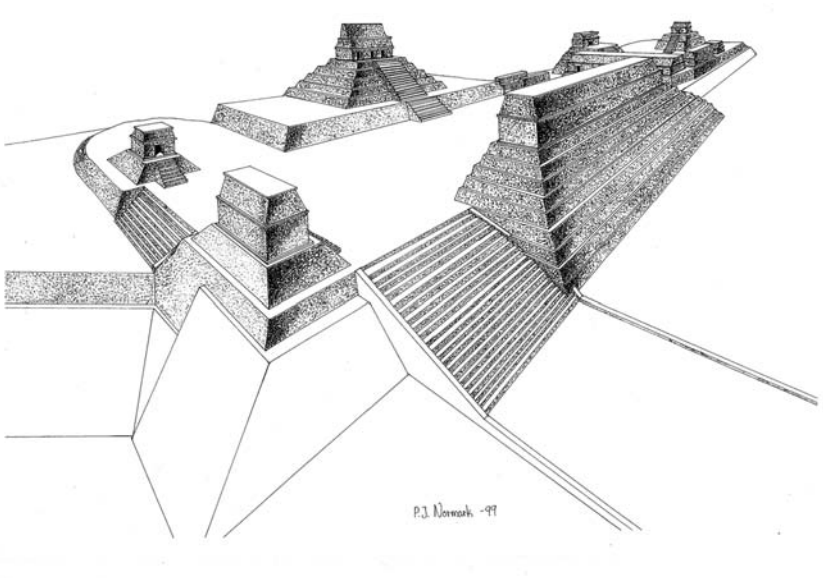


Figure 17. Reconstruction of Plaza Copal and the Bryan and Murphy causeway at El Pilar.

a ramp onto the Bryan and Murphy causeway which had parapets to direct the flow (figure 17). There are breaks in the parapet where the road flattens out and today these are outlets for water (Ford, et al. 2001).

Other sites connect causeways and water sources of various sorts. Sacbe 4 at Calakmul may run to the site of El Laberinto which has a permanent source of water and Sacbe 5 runs from an aguada to the site of Sasilha (Folan, et al. 1995:281). Sacbe 1 at Calakmul has a small bridge which crosses a canal between two aguadas (Folan, et al. 2001:294). In some places there are reservoirs by the side of the causeways at Caracol. One of the causeways that pass by a reservoir has two small buildings. These might have been some sort of control points (Chase and Chase 2001:277).

Some road terms suggest that causeways were used to cross wet terrain. A *buth be* is believed to be such a stone filled road (Bolles and Folan 2001:304). Examples of this might be the Coba-Ixil causeway which crosses a marsh (Folan, et al. 2001) and the causeways at El Mirador which cross bajos (Scarborough 1993:29-31). Muyil has a lagoon that retreated eastwards during the Postclassic. The inhabitants extended the causeway to adapt to this change (Witschey 2005:127). In the seasonally inundated savannah to the west of Chunchucmil there are rock alignments that could have controlled the movement of soil and water, but also functioned as narrow causeways in order to access wetland resources (Dahlin, et al. 2005:241).

Naranjal in the Yalahau region has causeways linking major architectural groups to water-related features, such as caves, wells and wetlands (Lorenzen 1999:98). There is a shrine near a wetland area at the end of a one kilometer long causeway. Lorenzen (2003) believes that this was a water shrine related to the cosmological plan. The rain gods (Chaaks) reside in the northeast corner of the quadripartite world, according to the Yucatec cosmological plan. Lorenzen argues that in Postclassic Yucatan, *zuhuy ha*, or virgin water was collected from sacred cave-pools by persons who impersonated the rain god Chaak. They carried the water back to the village in a ritual procession which re-enacted Chaak's movements across the eastern sky as he sent the rains over the milpa (Lorenzen 1999:102). Causeways were probably part of these ritual processions. However, Brady and Prufer (2005) do not believe that virgin water was collected to the extent as once believed.

Water management at Palenque made it possible to expand plazas on the narrow escarpment where Palenque is located (French 2002). Davis-Salazar (2006:127-130) also shows the importance of drainage and flood control that was used to make Copan a habitable place. To make this possible, people invested in substructure and subterranean conduits, stucco channels, paved patios, roof drains, splashboards and causeways. Whereas Palenque had a fairly uniform water management, Copan seems to have had different water managements. The civic-ceremonial centre used fewer kinds of water-control features than in the urban wards. The construction material is also more variable in the urban residential zones and the centre used dressed stone. This pattern is believed to reflect a state directed management in the centre and semi-autonomous units in the residential

areas (ibid:131).

Copan's causeways to the Bosque and Sepulturas wards impeded the flow of water and minimized the risk of flooding and sedimentation of water sources. An earlier version of the west causeway at Copan had a tall northern wall and parapet that diverted the water. It had at least one culvert under the causeway to prevent flooding (ibid:134). The eastern causeway also minimized flooding but it had no drainage which resulted in stagnant water. There are large lagoons in the physical centre of each ward. Both lagoons are downstream from the elevated causeways which may have protected them from inflow from small streams or rain runoff (Davis-Salazar 2003:276). The western causeway at Copan forms a northern boundary for the Bosque ward west of the Great Plaza. The east causeway passes right through the settlement at Sepulturas (Davis-Salazar 2006:132). However, this gave those living south of the eastern causeway an easier access to the laguna south of the causeway (ibid:136)

Edzna has an extensive system of canals (Andrews 1984; Benavides Castillo 1997; Matheny 1978). This network would have been used to intensify agriculture (Benavides Castillo 1997:126). The canals radiate from the settlement similar to the roads of Coba (Matheny 1978:199-201).

Climate

Water for reservoirs depended on rain run-off and as such they were affected by climatic changes. The northern part of the peninsula has a tropical monsoon climate with heavy rainfall only in summer (Shaw 1998:47). The north receives 1050 mm with a mean annual evapotranspiration of around 90 mm (Back 1985). The rain in the north comes by south-easterly trade winds with the result that the east receives more rain than the west. The regularity of rainfall is also important since this affects when to clear, burn, plant and harvest. The weather is unpredictable due to localized thunderstorms, droughts and hurricanes (Dahlin, et al. 2005:234). Climatic variations in the Yucatan peninsula today are moderate but the north-eastern corner is located in a hurricane track (Ward and Wilson 1976). This creates damaging storms in the Cochuah region once or twice every decade.

The past decade has seen several climatological studies in the Maya area. These try to explain both the emergence of hierarchical social formations (Hansen, et al. 2002), but particularly their "collapses" (Gill 2000; Gill and Keating 2002). Central in the discussion of climatic change is the work from Lake Chichancanab, near Ichmul and Yo'okop. This work shows long-term shifts in the availability of moisture during the Holocene (Covich 1970; Covich and Stuiver 1974; Curtis and Hodell 1996; Hodell, et al. 2001; Hodell, et al. 1995).

Gill argues that there was a series of severe droughts in the Lowlands from A.D. 800 to A.D. 1000 (Gill 2000). A drier trend reached its driest phase between A.D. 800 and 1000 and it corresponds in time with the Classic "collapse" (Brenner, et al. 2002:149). The Terminal Classic climatic shifts may have made it impossible to gain sufficient moisture for agricultural activities due to reduced rainfall in the Maya area (Folan, et al. 1983; Gunn, et al. 2002). However, the drought hypothesis has avoided the data from the Petexbatun area (Demarest 2004:107). Here the "collapse" occurred before the drought. The earliest sites to "collapse" were the ones located along the western rivers which make the drought hypothesis questionable. Gill (2000:306-307) also partly relies on later sources and correlations between droughts and changes in climate. These are textual sources from the Colonial period. All but one were written down after the congregation policy was implemented when people were forced to live in central towns in much denser settlements than had been the case during the Prehispanic time. This source dates to right after the conquest when there had been warfare and diseases so people may have died from other things than the drought itself. Gill also mentions droughts described in the books of Chilam Balam, which were written down some time after the conquest, but he is not dealing with a sufficient critique of the accuracy of these sources. Due to the congregation policy, the farmers came further away from their agricultural

areas and could not spread the risks. Droughts during the Colonial period may have been much more severe for these reasons. In fact, in the Cochuah region, the population reaches its greatest spatial distribution during the Terminal Classic; during the dry years. The settlement did not always concentrate around central water sources, such as cenotes. This does not mean that droughts did not occur or that people were not affected by them. It means that the scenario is more complex than Gill suggests.

The climatic change is attributed to various causes. The El Niño phenomenon and its "sister" event, La Niña have been thought to play some role in the Prehispanic Maya area (Messenger 2002:159). However, no discernable regularity between El Niño and recorded Mexican droughts has been found during the twentieth century or in Colonial time (ibid:165). Solar intensity varies through time, at intervals of 208, 100 and 50 years (Hodell, et al. 2001). The 208-year cycle is the dominant one and droughts are known during the periods of high solar intensity (Brenner, et al. 2002:151). Volcanoes have recently been blamed for several changes in the Mesoamerican history as they affect the weather, even far away from the eruption (Gill and Keating 2002:127). However, if this was used as an explanation for one or two events, that might be possible, but when Gill and Keating go on to explain every single local or regional "collapse" in Mesoamerica by volcanic eruptions in other parts of the world, it clearly shows the problems of the model. For example, it is argued that the abandonment of the Late Formative site of El Mirador was the result of the eruption of Taupo in New Zealand. It is argued that the Classic "collapse" was a showdown in three acts (A.D. 810, 860 and 910), which are correlated to volcanic eruptions in the Mesoamerican area (Popocatepetl and El Chichon) (ibid:135). Basically, any large eruption within specific latitudes could fit changes in the Maya area. Since these eruptions occur at least every fifty years or so, one can just pick any volcano whose eruption was contemporaneous with any change in the Maya area that needs explaining and from there one can make a generalized correlation and neglect the actual pattern on the local level.

It is reasonable to argue that the sizes and layouts of sites fluctuated with known climatic changes, but I would prefer a more localized pattern rather than Gill's exaggerations. Shaw argues that local deforestation leads to climate change. The local climate becomes warmer and drier when trees are removed (Laurance 1998; Walker, et al. 1995). Temperature rises and evapotranspiration decreases. It is likely so that many site cores were stripped from trees. The created microclimatic changes, different farming techniques and water management, as well as the availability of resources made some sites more vulnerable than others (Shaw 2003a).

The leaders of Yo'okop may have increased their ritual activities in response to a drought (Shaw, et al. 2000:9). Shaw believes that the causeways of Yo'okop were central in this development. Some causeways were probably part of these ritual processions and this may be one reason why the causeways at Yo'okop were constructed at the time when drier conditions prevailed (Shaw 2001f). The expansion of Ichmul may also have been triggered by a need to better integrate newly resettled agricultural areas with the centre, at a time when climatic conditions became drier.

3

Towards a polyagentive archaeology

3.1. Macro, micro, agency, subject and beyond

As should be apparent from Section 2, the causeways cannot be reduced to simple models. They are more rhizomatic. In this chapter, I shall systematize the problems inherent in the models and interpretations presented in Section 2 into general headings and topics. I am trying to point out some problems within the now dominant archaeological "discourses", to be able to launch a complementary perspective. I feel a need to break with, or at least re-define, old and "ontologically secure" concepts.

3.1.1. Problems in Mayanist research

With a heavy reliance on anthropological and sociological theories, which originated in explaining colonial and contemporary social formations, archaeologists have always tried to interpret meaning out of mute materiality. Archaeological interpretations have usually derived from one of many social theories (cultural ecology, structuralism, Marxism, etc.). These often try to homogenize a social formation to a normative ideal.

There might be some general concepts or categories that are more or less the same independent of time and space (time and space themselves, matter, life, death, the social, etc.). However, when we define them they tend to get so blurry that they are not operational. Contemporary categories and abstractions are also historically specific constructions and not essential entities (Foucault 1972). Essentialism is the idea that characteristics defined as the essence of something shared by all similarities at all times. Nothing can act contrary to the essence. However, any attempt to define something leads necessarily to an essentialization (Grosz 1995:45, 55). Therefore, language is problematic in this sense, something both Bergson (1998) and Wittgenstein (1998) have pointed out, but solved it in different ways.

Many of the "traditional" high-level abstractions and categories, such as economy, ideology, religion, power, etc., could be seen as either essential or as constructed, but this distinction will not get us far. A strict constructionist approach is not to be desired, if we do not want to fall into total relativism, which is not my aim.

What I shall emphasize here is that in the macro-models presented in Section 2 there was a lack of importance of the human agents or the single artefacts since the models mainly emphasize macro-level structures. A recent example of this is Rice's may-cycle model. Although she claims that the model allows for individual agency and that rulers were not slaves to the calendars, the calendars acted as a fundamental principle that affected a deep structure of their world (Rice 2004: xviii). Materiality in the Maya area is believed to reflect such supposedly deep macro-structures. However, the may cycle does not seem to be a deep structure at all on the agent level, since the may cycle depends on a "transcendent" culture behind it. The cycle only works if it is abstracted from the human beings and materiality. The connection between macro and micro is weak.

One could argue that, for instance, household archaeologists study structures on a micro-level or that they are more interested in the individual human lives. However, these households are often analyzed from a top-down relationship in which the household is seen as an example of an extended regional household economy, social organization, etc. Take this recent quote from Gonlin (2004:234) as an illustrative example; "the remains of […] small households provide evidence of the *general Maya culture* shared by these people throughout the Maya region." (my emphasis)

Examples of such common, general and all-encompassing concepts in Mayanist studies that are important to change in this thesis are: ideology, culture and social evolution. These will be explained below and I shall later suggest a redefinition of them.

Ideology

Mayanists tend to use a materialist view of ideology, but it is seldom stated what kind of ideology is meant. Is it everyday ideology, political ideology, etc? The whole idea of ideology has so many divergent aspects, that it is often difficult to know what researchers mean when they use the concept. The common Mayanist conception of ideology is far from Žižek's (1989) use of this concept. For him ideology is not a false consciousness but rather a social reality whose existence assumes the agent's lack of knowledge about the essence of ideology.

The proponents of ideological models in Mayanist studies usually argue that no state-directed subsistence system was needed in the Maya Lowlands and that demographic pressure came into existence long before the formation of polities. Therefore, in order to "legitimize" the power, the elite needed to focus on ideology, which is believed to be shown in trade which focused on items of an "ideological" nature, such as polychrome ceramics, eccentrics, jade and quetzal feathers (Demarest 2000). What ideology means here is not specified. Demarest argues for a theatre state, inspired by Geertz (1980), where rituals and ideology were used to gain and maintain power. Since the state was dependent on ideology, it was vulnerable to ecological crisis and military defeats (ibid:281-291). Similar arguments have been proposed by other ideology minded Mayanists (Freidel and Schele 1990; Ringle 1999).

Ideology is believed to have been the glue that kept the social formation together and legitimized the rights of one group of people to control another group. In these approaches, ideology is externalised, a thing-like quasi-object that exists outside the human agent. As such, ideology cannot explain transmission. Ideology persists on a level far beyond the human agent (Turner 1994). In this mode ideology is of little use. Ideas that suggest that power is legitimized or manipulated by ideology give an impression that the elite invented a certain ideology which others believed in. This was, of course, not the case since the elite was also the result of ideology. Ideology can be a useful concept but it needs to be approached from the level of the human agent, rather than from an all encompassing macro ideology.

Culture and culture-history

Mesoamerica as a concept with cultural markers from the 16th century was formed by Kirchoff (1943). The boundaries of Mesoamerica have often been seen as fluid depending on spatial and temporal segments (Golden 2002:40). However, many Mesoamericanists are still thinking in terms of static cultural groups: Maya, Zapotecs, Olmecs, etc. These are more-or-less normative descriptions of idealized cultures constructed or reified by modern researchers. In this view, "cultures are superorganic, existing above and determining the behavior of individuals" (Kowalewski, et al. 1992:260). It is common to see changes in materiality as cultural changes. However, some social expressions do exist "longer" than others, but they may also co-exist with a plurality of other expressions, not possible to minimize to a set of clearly defined "cultural" hallmarks.

It is common to attribute style, in ceramics and architecture, to cultural and ethnic relations. For example, Guderjan believes that the so called pseudo E-groups were used to form a "Maya

identity" for Classic period rulers of the eastern Peten since they were important elements in the monumental architecture (Guderjan 2006:99-102). However, style do not equal ethnicity and style have many different roles in a social formation (Normark 2004b; Stanton and Ardren 2005).

When researchers claim that there was a general Maya civilization, culture and ethnic tradition that never went through a collapse or died, because it was transformed into new configurations during the Terminal Classic (Demarest, et al. 2004:571; Rice, et al. 2004:6), it is a clear indication that cultures are seen as vast complexes of variations of one and the same entity. Thus, many Mayanists emphasize the social whole rather than its parts. All parts are forced into the greater entity of culture. The parts are defined and determined by the whole. This is an idea that typology, in the Weberian sense, is partly to blame for. In this typological classification the types are ideal and variations are just differences of degree to this ideal. They become parts of a whole rather than making up the whole (DeLanda 2002).

Problems do therefore occur if we try to explain something that is out of the assumed "Maya" cultural pattern, which does not fit the general picture. Therefore, the culture concept hides the variation that we always encounter (Barth 2002:30). We would be better off if we did not use such generalizing concepts as culture. However, the "opposite" way, to focus on human acts, lives, practices, representations and social constructions are not alternatives either as shall be shown in this Section.

Some of the neo-Darwinists within archaeology (O'Brien and Lyman 2000) are largely followers of culture history and they reject much of the processual archaeology developed by Binford (1983). What is problematic for them is Binford's focus on adaptation, whereas they focus on selection. To them, there is a difference between function and style, which is a fairly classic dichotomy in culture thinking. Function is important for survival and style is important to define populations. This evolutionary thinking is different from the traditional view of social evolution that has partially affected Mayanist studies.

Social evolution

The use of traditional evolutionary schemas, such as band, tribe, chiefdom and state, has also created limitations and stereotyped views of social formations in Mayanist studies. Giddens criticizes theories of states and chiefdoms for being evolutionary and for believing that the emergence of states has to do with technological change or surplus production and accumulation. These theories do seldom fit empirical data, meaning that surplus accumulation does not always precede the development of a state. This orthogenetic evolution consists of sequences of forms in which forms emerge from other forms, through certain stages. This process is irreversible and it is not repetitive. It is believed to create diversity by adaptation and also to be progressive, aiming towards higher forms (Giddens 1984:231, 249).

Evolutionary thinking has sometimes also emphasized the "florescence" of a culture, when it is believed to have reached the most "civilized" stage, that is, writing and monumental architecture in the Mayanist case. This is when social evolutionary ideas have been mixed with the art historian stance of Mayanist research, where art and architecture reaches a peak from where it degenerates and so on. This is a more cyclical view than a strict linear evolutionary view. However, evolution has been believed to follow a specific order and this has also shaped the construction of chronologies in Maya archaeology (Golden 2002:35). Stanton and Gallareta have opposed this linear transformation in Mayanist studies, where variability in social formations is being neglected. Evolutionary schemas "artificially compress similar yet diverse forms of organization into categories that treat them as the same" (2001:231). Most evolutionary thinking is teleological and, as such, it is the realization of a pre-defined program; later forms are defined by earlier forms as if the later form already existed when the earlier form emerged. This is what Bergson (1998) attributed to both mechanism and finalism within evolutionary thinking.

Scarcity is often seen as a driving force for evolution. Many are those Mayanists that explain how scarcity of ecological resources and drought affect and change social formations (Fedick 1996; Gill 2000; Johnston 2003). The idea of scarcity being one of the driving forces in human history probably goes back to Malthus. He was influenced by Newtonian ideas of laws and closed systems. Malthus formulated the two principles of population growth and diminishing resources. He had a great impact on Darwin since scarcity became the impetus for natural selection; weeding out the less fit and reproduction of the well adapted. Life became a struggle over dwindling resources and to avoid death by reaching equilibrium (Grosz 2004:34).

Nietzsche criticized such approaches, particularly the ones in neo-Darwinism. To him, life and the world does not strive to generate equilibrium, it strives to break out of this. He suggested a "superabundance or excess of energy, of force, of resources, and of production" (ibid:102). For Nietzsche, it is this surplus that generates self-overcoming, which is the driving force of evolution.

Social formations are not closed entities in the way biological individuals tend to be seen as. Whereas a biologist can say what evolves, this is not so easy in social science. Therefore, Giddens suggests a complete break with social evolutionary ideas (Giddens 1984:237-239). I disagree with him on this point. There are other forms of evolutionary theories, such as the one developed by Bergson. His "creative" evolution can be modified to fit a "social evolution" in which the immanent is emphasized, where teleology, essences and stages are removed.

Ethnographic analogies

What the three briefly described concepts of ideology, culture and social evolution have in common is that they are used when Mayanists employ ethnographic analogies, and preferably direct historical analogies from the Colonial period, or present people known from ethnography. The "Maya culture" is seen from an ontogenetic perspective, like an organism evolving from one origin. It is the same essential "Maya culture" in the past as in the present. They are only variations of the same "culture". The culture has certain stages which are differences of degree to one great transcendent culture. As such, it is believed that analogies are important since present "Maya culture" is just a difference of degree to the past "Maya culture".

An analogy is a way to relate the familiar with the unfamiliar, to compare them to see if they share some similarity. This is believed to increase the understanding of the unknown. Shared similarities are established between the things under study, so the things are not seen in themselves. This might work when we compare material objects, but analogies are more problematic when it comes to human behaviour. Archaeologists use both general comparative and direct-historical analogies. Continuity is believed to be important in the direct-historical approach (Lyman and O'Brien 2001:303-304; Rice 2004:3-4). Rice (2004:4) suggests that the best analogies are the specific ones rather than the general. It is believed that one should work back from known historical periods (Willey and Sabloff 1980).

Lyman and O'Brien (2001:303-308) argue that American culture-history originally relied on specific historical analogies and therefore had Darwin's descent with modification as its ideal, where similarities between ethnographic and archaeological data were homologous. This was mainly done to establish a chronology. Once this had been solved, there was a change towards orthogenetic explanations and general comparative analogies which have no observable evolutionary connection between ethnographic and archaeological data. However, in the orthogenetic view, nothing is creative but acts according to laws and predetermined stages. These two versions of evolution have often been mixed and it is the latter that is considered to be most problematic, but it is often mistakenly believed that this was the view of Darwin.

However, any ethnographic analogy is a tempting, deceptive, and dangerous pit which the author himself has fallen into in an earlier study (Normark 2000). This is no clearer in a recent

volume on cave archaeology by Brady and Prufer (2005). Although Prufer and Brady (2005:406) mention that caution should be taken with analogies, their statement seems mainly to be a way to cover up their almost complete reliance on ethnography.

Hodder (1982) has argued that some analogies are more valid than others, but there is no foundation for such an argument. A greater knowledge of ethnographic studies and Colonial sources does not always give more knowledge of Prehispanic social formations. Ethnographic analogies are especially common in American archaeology since it has primarily studied the Other (the "Indian") (Fahlander 2004), and because of a historical relationship to cultural anthropology (Willey and Sabloff 1980). For example, the use of the concept of "shamanism" (which is a general analogy from Siberia) as an explanation of Mesoamerican art has reinforced the ideas of an ahistorical, apolitical and irrational "Other" among idealist Mayanists. The main influence of the idealists, Eliade (1964), sets shamanism outside socioeconomic and political history (Klein, et al. 2002:384-388).

Even direct historical analogies give an aura of static social formations. How long does a tradition actually exist (and do they really exist other than in culture-historical models)? By expanding the area of analogies (both spatially and temporally), researchers can always find an analogy suitable for their objective(s). However, there are no "cultures" isolated from a wider world. Not only did Spanish colonialism affect the indigenous peoples of the Maya area, so did the presence of "Olmecs", "Teotihuacanos", "Toltecs" and "Aztecs". Thus, instead of talking about possible Maya/Central Mexican "hybridisation" as had earlier been the case with Chichen Itza, we could talk about "homogenisation" of certain activities and materialities.

We can never do archaeology without some form of analogy. We might use analogies from our own social formations, such as when Fahlander (2003) discuss the distribution of air-conditioners within a modern settlement to problematize the archaeological suppositions concerning the spatial distribution of materialities. Ethnographic and ethnohistoric analogies may be useful in pointing out flaws of assumed "facts" rather than to support assumed facts and it is as such that they will be used in this text.

Beyond typology – towards a populationist approach

As seen in Section 2, the archaeological remains of causeways at sites in the Maya area have been used to study social structure, political complexity, economics and cosmology which are supposed to have existed in these social formations. These high-level abstractions are believed to be essential, they can always be used at any time or place in the world. However, they are fictions which the archaeologists use to represent, classify and order the bulk of information they collect during fieldwork. Trade and agriculture are usually lumped together as economy, although they are quite different social activities. They are not commensurable units and not always related to each other. The traditional analytical abstractions indicate different kinds of interaction which cannot be separated from each others, since they to a large extent overlap. Agriculture is not only economy, it is also related to religion, social organization and so on. It is for historical reasons that archaeologists have used these terms and seen them as universal and eternal. Agricultural activities could potentially have been analyzed from another perspective.

However, I am not arguing for a relativist or a constructionist approach. In relativism there exists no right in judging or criticising different positions, they are all equivalent. However, it is only by having a perspective that we can criticize other perspectives (Grosz 1995:31). I outline my perspective in this Section but the aim is not to create a ready and fixed model.

Models can easily become their own objects of study since materiality is forced to fit the defined models (Fahlander 2003:52). Instead of trying to fit archaeological data into a fixed anthropological model or typological scheme, one should start from the material data itself. One solution would be to free archaeological theory from top-down approaches, from structure to

agent, the dominant approach in Mayanist studies. I will rather focus on Foucault's (1972) inductive use of the term archaeology; theories should be based on empirical data. This is usually not done in archaeology where archaeologists often set out with a pre-defined theory or model, often based on ethnography, and try to find support for it. The other category of archaeologists, those who try to interpret the archaeological record "as it is", tend to be somewhat atheoretical. In fact, their presuppositions are very theoretical, but they are not considered as such. Archaeological interpretation is believed to be "common knowledge" or "common sense".

I do not wish to ignore changes that occur on a grand scale. For instance, local destructions at one site may relate to the politics of the "superpowers" (Martin and Grube 2000). Furthermore, the landscape in Yucatan was not only transformed by local activities but also from greater trends such as the reforms by the Spanish Bourbon dynasty and an expanding "market economy" during the later part of the Colonial period (Forrest 1997:25). However, to piece together such a vast area or topic one need too much non-empirical data not available to the archaeologist. Archaeologists also introduce externalities, transcendentals, *quasi-objects*, such as "culture" or "market" to explain continuity and sharing.

One can easily see the difficulties in creating new approaches since most models build upon older models. This is because many concepts that are central to much of the Mayanist studies are often poorly defined. Parts of Mayanists' use of social theory relies "upon the presumption that it is possible to formulate theorems of structural causation which will explain the determination of social action in general" (Giddens 1984:228). The risk of creating stereotyped social formations with little connection to the past and its material remains, is profound if we continue to use concepts which have been used to such an extent that they no longer are useful. Few researchers define their central themes, but rather take them for granted. Every now and then archaeologists should go back to their actual data and see what their presuppositions are in relation to this data, and see if they still are valid. Unfortunately, Mayanists tend to be less interested in such philosophical matters.

Most, but not all, Mayanist models presented in Section 2 are based on a top-down view of social formations. Human agents are often removed from the discussion, the interest lies on the macro-level rather than on the artefacts. The models are also generalizing, and oddities in the particularities are either ignored or explained as the exception that supports the rule. Many models are quantitative and believed to be objective. In these approaches it is common to analyze social life from a context beyond the immediate interaction. These institutional parts of the social world are analyzed by classifying and measuring (ibid:329).

Thus, the top-down models are not operational from the perspective of the single artefact itself. The models also claim continuity; everything is squeezed in to fill the voids of the past. This generates an *archaeology of false fullness*, a belief that we can gain a holistic view when we only have minute fragments. If the use of "un-problematic" or "common sense" abstractions such as cosmology or politics cannot explain the totality of social activities and materialities we find in fieldwork, why use them at all? They can be useful within the archaeological discipline, but they should only be seen as fictive categories which may not represent the world of the ancient people, as they knew it.

A major problem related to the top-down perspective that needs to be resolved in polyagentive archaeology is *typology* that follows the Weberian type concept, commonly used in American archaeology. In this typology, there is an idea of a static and ideal type behind the variability that can be observed. It is assumed that the type is fixed and real and the variability is not. Any typology of causeways assumes that there is one essential, eternal and stable category of causeways, to which all real causeways are mere deviations. As a contrast, a *populationist* perspective sees everything as unique. The causeways can only be seen as a collective in statistics. The populationists see the type as an abstraction. So, for the typologist, variation is unimportant, but not for the populationist

(DeLanda 2000b). For example, the ranking of sites into hierarchies depends on typology where there are essential characteristics that unite Rank 1 sites with other Rank 1 sites, and so on. In contrast, DeLanda sees social institutions and sites as social individuals that make up a population. These social individuals have their own lives that affect other non-hierarchical levels (ibid).

In order to come to grips with a populationist approach, we must begin at the other end, at the micro-level, a level that usually begins with the human being. It is often assumed that agency theories begin at this level and that they let us reveal variety in past social formations.

3.1.2. Agency and subjectivity

Although most Mayanists rely on macro-level structures, some have emphasized the human agent, subject and body (Gillespie 2001; Houston 2001; Houston and Stuart 1996; Houston and Taube 2000; Joyce 1996, 1999). There are many different views of what constitutes agency, subjectivity and corporeality, but it is often argued that we should focus on the individual intentions of human agents (Hodder 2000:23). Hodder further suggests that we should focus on the biography of individual "lived lives". What then makes up a human agent and is Hodder's suggestion even possible?

Agency

In agency theories, all social formations are "expressed in the routines of daily social life, mediating the physical and sensory properties of the human body" (Giddens 1984:36). The body is a frontier which spatial relations do not cross. The body and bodily movement form the centre of action and awareness into a unity. We experience the world through our senses which is being handled and affected by our bodily constitution (ibid:65).

Agency is not an easily defined concept in social studies. Giddens defines the agent as a human subject placed within the body of a living organism (ibid:51). Human agency usually implies an intentional individual which is only partially restricted by the social structure. However, what an agent does and what is intended must be separated, since acts have unintended consequences. Thus, agency cannot just be defined from intentions. Agency is related to events in which an individual is a perpetrator (ibid:8-10). The individual interacts with others and is interdependent of other embodied agents (Burkitt 1999; Davis 1997; Welton 1998). Giddens argues that an agent must be able to use causal powers, such as to influence the action of other agents. Action is the capability to "make a difference" to already existing states of affairs (Giddens 1984:14).

Agency is situated and it is a condition of subjectivity. However, the subject is not a constant entity but can take different positions, some of them might even be contradictory (Moore 1994:4). But, there is a physical fact of being an embodied subject and a historical continuity and discontinuity of the subject where earlier subject positions tend to determine present subject positions (ibid:55). According to Foucault there are no "real" subjects, there are only subject- or subjectifying forms constituted through certain activities. There is no subject before action; the subject is manifested in the activity itself (Beronius 1991:81). Foucault does not see the subject as an internal self-referential rational entity, but rather as a dynamic exterioricity. Therefore, there is no reason to understand what this self is. The self is unimportant since human agents are normally not aware of how their discourses are regulated. Acting is therefore seldom under the agent's control, and agents may only be able to explain some of their acts (Thomas 1996:47-48).

There are primarily two sociologists that are used by archaeologists who discuss agency. These are Pierre Bourdieu and Anthony Giddens. There are plenty of others, but this is not the place to give an account of agency theories since I will partly distance myself from them.

Bourdieu

Bourdieu's (1977, 1990) agents hold different positions within certain social fields. The agent is

neither a special person nor an individual; it is a decentred construction and it is understandable only in terms of the field. Basically, his theory of practice is about how a human agent moves about within a field and a structure.

Bourdieu sees practices as only understandable in relation to structures behind the agents that are incorporated in the body as *habitus*. Habitus is an explanation of structured, structuring and durable dispositions internalized in humans which are produced historically. Habitus is based on the memories of past practice which unconsciously shape future action. As a child, the agent learns how to act, speak and behave. The child understands the logic behind practices, and the agent gains a habitus depending on the social position the agent has. The habitus is created in the interaction with other agents and materiality, and it influences practices which in their turn influence the production and reproduction of habitus (Bourdieu 1990:214). Habitus is a state of body, which organizes where people move around. This embodiment of habitus is called *hexis* (ibid:70). The agent strives to optimize its potentials within the limits of habitus.

Habitus produces both individual and collective practices. It is homogenizing because of the homogeneity of the conditions of existence of a specific group (Bourdieu 1977:80). No person has had the same experience as another but people from the same group are likely to have been confronted with similar situations (Bourdieu 1977:86, 1990:59-64). Thus, groups as a social formation may have certain characteristics in common, due to their participation in similar practices and with similar materialities. Therefore, habitus is believed to create a common code, and collective mobilization must confirm with the habitus of the mobilizing agents to succeed. This makes social formations as a "totality" rather stiff, not prone to change, especially so in relation to durable materialities.

It has sometimes been argued that Bourdieu's concept of habitus does not include individual motivation and experience and that it is deterministic since it emphasizes structural, rationalist and economic perspectives. Habitus has been used to show that differences between groups not only are dependent of production relations, but also of social norms and bodies. Social relations are inherent in the bodies (Berggren 2000:42).

The habitus is part of *doxa,* which is the pre-verbal taken for granted, is created through practice and the interaction between fields and habitus (Bourdieu 1990:68). Doxa is a frame for social action, a representation of the world that creates a way of living. Materiality is an important aspect of Bourdieu's doxa (Shanks and Tilley 1987:113). Doxa can also be seen as a political instrument which makes it possible to reproduce a social formation. In such cases, doxa alienates the subject from its own decision process (Smith 2001:158). Doxa is strongest in social formations where the agents' habitus reproduces themselves most efficiently in relation to stable structures (Bourdieu 1977:165). However, where the structures are unstable and breaks down, there may exist different versions of doxa (ibid:168).

Changes in practices that may affect a social formation do occur, but if they do they might be resisted by *circular control*. This is the constraint that every member of a social formation imposes on others. To break with old practices there has to be a collective break and this is less likely to occur. If changes occur it happens suddenly because circular control loses its power as soon as people realize that the old practices can be broken. Change mainly occurs as accidents (Bourdieu 1990; Dornan 2002:306).

Bourdieu appears to be more commonly used in applied archaeological research than Giddens. The arguments often are that Giddens focuses on the contemporary Western capitalist society and that he therefore cannot be used for the past. Because one of Bourdieu's many studies focused on a "traditional ethnographical people", the Kabyle in North Africa, this seems to be the sole reason why archaeologists think he is more relevant. For example, few of the archaeologists discussing Bourdieu's theoretical applications for the past, refer to his book on the academic man, *Homo Academicus* (Bourdieu 1988).

Giddens

We find a less constrained agent in Giddens' structuration theory. Giddens tries to bridge the differences between structure-based and agent-based theories. His structuration theory does not focus on the individual agent nor on a social totality but on routine actions in time and space. Structure and action are seen as a duality rather than as two different phenomena (Giddens 1979:218). A structure consists of repeated rules, habits and resources that have been organized in institutions (Giddens 1984:28-34). Structuration is the condition that affects these structures. Agents do not create social structures; they just reproduce and/or transform them. The greater spatial and temporal extension an institution has, the more difficult it is to change or manipulate by an agent (ibid:171).

Giddens' view on routine actions includes motivation, reflective experience and rational thinking. Meaningful action is not only a collection of separate intentions or motifs, as human action is part of duration; a constant flow of action and cognition. Through the practices, the human agent reproduces the structures that make the routine actions possible (ibid:2-3, 170, 344). A human agent has a trust (*ontological security*) in the continuity of the world and social activity. This trust is found by routine action (ibid:60). Routine is less stressful for the agents than new situations (Giddens 1979).

His idea of agency is not related to intentionality or knowledgeability but to the capability of doing things in the first place (Giddens 1984:9). Intentions are only formed from reflexive monitoring of action. Other aspects of agency, such as unconscious acts, unintentional acts and deliberate non-action, can also change or maintain social structures (Giddens 1979:41). Therefore, change can be found in all social reproduction. Social change occurs as a result of unintended outcomes of social action or by breaking the routine action (ibid:114, 216). Thus, agency does not exist outside or abstracted from historical context, since agents are shaped in relation to constraining structures which they also transform through their practice (Giddens 1984:162).

Fahlander (2001:21) argues that neither Giddens' nor Bourdieu's theories offer the possibility for agents or non-institutional groups to change a social formation intentionally. Structuration is unequally distributed in a social formation and some charismatic individuals are sometimes able to break with the normalising structure and initiate a new discourse. Such a discourse cannot exist in the long-term since individuals have a limited life span. If new ideas are continued by followers they may be merged or may replace an older discourse (ibid:94-95).

Another problem, in both Bourdieu's and Giddens' theories, is that the subject remains very much the same through time which is problematic since the human subject is constituted by the splitting processes of temporality (Hägglund 2002:169). Their theories also lack an evolutionary component. Thus, it is hard to know how an agent was constituted in the distant past since agency cannot be taken out of evolutionary processes.

3.1.3. The human body

There are several kinds of theorising of the agent's body (see Houston and others (2006) for a recent Mayanist example). The inscriptive theorising of the body is often associated with Foucault (1990). This is when the body is a surface in which social values are inscribed and subjectivated by power and social- and ideological processes. These bodies are coded with signs. Other approaches, such as psycholoanalysis and phenomenology, focus on the lived experience of the body (Grosz 1995:33-35). Neo-Darwinians follow another trend and see the body mainly as a biological entity. Genes use the body as vehicles for reproduction (Dawkins 1989).

Some inscriptive and lived body approaches shall be described in this chapter. What they have in common is that they rely on representational thinking. This is criticized by Bergson. Bergson does not see the body or nature as a strict "biological" vehicle for genes, a cultural inscription or

as embodied experience, but rather as a complex virtuality (Thrift 2000:35). I shall deal with this virtuality later on.

Phenomenology of the body

Both culture-history and processual archaeology maintain a Cartesian dualism between mind and matter in which the subject is the centre for all understanding and perception is a copy of the external world. The human mind is separated from its physical body and its surroundings, and it also takes a superior role. Thus, there has been a separation between subject and object in much of science. This has led to the view of the subject as knowing and active, and the physical world as passive and as the object of the knowing subject. As the internal mind has been seen as more real than the external world, this has led to a greater distance between people and the world (Thomas 1996). Husserl reacted against these abstract constructs and he began to study the things in themselves, laying the foundation for phenomenology (Husserl 1970:95).

Phenomenology analyzes the intellectual processes of which we are introspectively aware without assuming any causal connections to existing external objects. It studies how we can distinguish the apparent from the real and the knowledge that we gain through perception. Phenomena are things that present themselves to the senses so we can perceive them. Objects do not themselves contain meaning but subject and object transcend. Meaning is formed through our being-in-the-world. Most phenomenologists see the human subject as active in perceiving the world. However, the subject is not always conscious during this perception (Magnusson Staaf 2000:138).

We are directed toward something other than ourselves. This intentionality is the least common denominator for all experience and can be divided into *noesis* (mental acts by which we experience something) and *noema* (the way objects show up in our experience). The noema is not a real object, but a structure within the consciousness (Hägglund 2002:153). This experience comes from social activities, feelings, experiences and thoughts. In Husserl's "life-world" the world is the one which we perceive through our senses. The life-world is the arena in which people interact and give things meaning (Husserl 1970). Since Husserl focuses on perception he ignores other parts of everyday life, which were of concern to Heidegger. Being-in-the-world is Heidegger's way of describing how things are recognised in a meaningful sense. This condition is not dependent on the physiology but has to do with the body's involvement in the world (Thomas 1996:17-18).

Some contemporary cognitive science have turned to phenomenology. These researchers also see the human mind as embodied, situated and distributed. The mind is not the same as the brain and the mind is coextensive with the world that is beyond the human body (Clark 1997).

There are six principles in the phenomenological approaches in archaeology: (1) humans are part of the environment, and not only an object; the subject is merged with the object it perceives and the object is an extension of the subject in time and space; (2) the physical environment is linked to the social formation; (3) the environment affects people unconsciously; (4) the perceived and the real environment are not the same; (5) the environment is a mental image; (6) there is a profound symbolic meaning of the environment (Johnston 1998:58). The phenomenological approach is also used to suggest that the environment is one of the most important factors in the creation of cosmologies and power (Fahlander 2001). The main positive effect of phenomenology in archaeology is the emphasis on how space and landscape are perceived from the bodily experiences rather than from the computer generated maps archaeologists work with. The body is no longer seen as just a vehicle for transportation that tries to minimize energy expenditure.

However, followers of Bergson argue that phenomenology restricts immanence to a human subject. Phenomenology emphasizes perception and affection which leave us only with the possibility of studying what is ordinary and "common sense". The privilege of perception sets the subject as a Being-in-the-world (Pearson 1999:70-71). Here the human subject is in focus. Latour

sees phenomenology as a human-centred account of embodiment (Crease, et al. 2003:16). This subjectivist philosophy creates a dualism since it is argued that subjective phenomena are found in the subject and the objective phenomena are neglected (Ihde and Selinger 2003:10).

Thus, the main problem with phenomenology for my purposes is that it is focused on the human agent's subjectivity and therefore it lacks an operational use in archaeology that deals with materialities. Phenomenology cannot help us to approach non-human agencies (Crease, et al. 2003:17). Another restriction is that the capabilities of the human agent within a network of other human beings where power relationships exist, are often missing. This is something discussed by the approaches below.

The inscribed body

Another trend in studies on human agency is to treat the body as a social construction. No clearer is this in gender studies. The constitution of human bodies is not homogenous and differences between the sexes may not only be biological but may have to do with socialization processes and social constructions.

The assumption that the differences between the sexes derives from two different physiological bodies has been criticized by several researchers. Although Yanagisako and Collier (1987:17) question the biological foundation for gender categorization, they still see gender differences as natural facts. The biological sex is believed not to be able to form gender identity since the experienced biology can be expressed and interpreted in "cultural" terms (Arwill-Nordbladh 1998:67). Butler (1990:92) argues that there is no distinction between sex and gender at all. If gender constructions are varying, then the categories that create gender differences are also varying. Body, sex, gender and sexuality are related to each other because of performative actions. Butler (1993:12-16) defines performance as a form of repeated citation of a disciplinary norm. The performances focus on practices related to gender categorizations which only become obvious through repetition (Morris 1995:571-574). Such ideas have been fuelled by Foucault's writings.

Foucault sees the human body as an element in a structure, an adjusted force which works in the service of certain power relations. To control people and their bodies they need to be classified, and given certain identities within a discourse (Cornell and Fahlander 2002b:37). Gender is an effect rather than an origin from a given and essential entity. It is a category produced by a certain discourse in a particular temporal and spatial setting. Foucault argues that the concept of "sex" did not exist before its creation within a discourse where its meaning was specified and therefore there is no gender outside the discourses (Foucault 1990). Thus, Foucault sees the body as a surface to which a discourse is applied. The physical and material bodies have less interest for him. Others, such as Houston and McAnany (2003), disagree with Fausto-Sterling's (2000) assumption that since some people do not fit the dyadic anatomical order of man and woman, no one fits that category. It is my belief that all gender categorization derives from physical differences, no matter how the discourses affected or was affected by the physical body. The physical body is not just a surface to which we can attribute social constructions. Social constructionism is a social essentialism that is as problematic as biological essentialism.

Gil (1998:126) argues that we should escape the constructionist notion of the body as an inscribed surface, where the body is just an image from which social formations can construct themselves. The problem with the inscribed body is that it is static and filled with signs of a social formation. It is also a body separated from other things. There is a non-representational view that maybe can help us from this. In this view, the body is not about signs and meanings but has to do with the mechanics of space that has been formed in the relation between bodies and things (Thrift 2000:39). To view the body as materiality makes us focus on a physical entity with abilities and constraints in relation to other materialities. This is in line with the polyagentive agenda where qualities such as anticipation and intuition are material orientations, ideas that are found in Bergson

(1998).

3.1.4. Socialization - subjectivation

A theme in Western thought of how human beings are socialized is that the self relates to the *Other*, that is beyond the agent's physical or subjective entity. The Other is believed to be needed to form the understanding of the self, of materialities and of other social beings. The philosopher Levinas criticizes philosophy for making the unknown familiar when the Other is reduced to the Same. The Other must be met as something that cannot be conceptualized (Kemp 1992:40). Thus, Levinas claims to study the relation to the Other, but Derrida argues that the philosophy of Levinas actually denies the alterity. If the Other is an absolute Other there cannot be a relationship at all. The word itself is only meaningful if there is a relation (Hägglund 2002:195). Husserl on the other hand claims that the intersubjectivity is dependent on a represented structure where the ego relates to the Other by being an Other for the Other (ibid:202). The Other can therefore never be approached in its Otherness (Eaglestone 2000:101).

The idea of the Other implies that communication between two people takes place between two Cartesian minds. Žižek (1989) has tried to defend the Cartesian cogito against the "postmodern" decentrings of the subject (Smith 2004:6). To do this he has used the psychoanalyst Lacan who emphasizes how the self is formed and relates to the Other. Lacan calls the perceived or imagined world the *imaginary order*. The *symbolic order* is the unconscious and symbolic structure of the world, consisting of practices and norms. It is based on language which is needed before a subject can appropriate self-identity (Thomas 1996:46). The symbolic order is a place where our most private opinions are formed. It is a network of references which makes it possible for us to conceptualize our environment. This is the interpretation constructed by the ego in its relation to the Other. It needs to be (re)produced by the social subjects. We are born into a symbolic order which is affected by how we live and by what our environment looks like. When our subjects are constituted, we internalize a non-complete symbolic order. Thus, we are usually limited to choose what has already been chosen. However, the symbolic internalisation never succeeds properly since there always is a remainder of something irrational left. This is part of the *real*. The real is what is not understandable as it enters the symbolic. The paradox is that we cannot talk about it before it has been symbolized and ceased to be real. To be able to patch the symbolic order together we need the imaginary. The real is the opposite of the imaginary and the symbolic is a link between the two (Fahlander 2001, 2003; Thomas 1996; Žižek 1989).

The primary socialization is established during childhood. Imitation among children depends on their acquisition of an image of themselves (Grosz 1995:90). The capability for autonomous action seems to emerge when the child understands others to be agents. The infant understands that its body is the locus of action and attributes similar qualities to other bodies (Giddens 1984:58). There are also other socialization processes which continue throughout life, and these processes never form a stable personality.

The "postmodern" critique of Lacan argues that he sees the human existence as a lack of being, a lost original. The subject is determined by the symbolic order of language. It is not stable and we can never understand ourselves. This is an alienation from a true being we have lost but which we desire to reclaim (Hägglund 2002:181, 208). For Lacan, then, the real is what is beyond time and language, a classic return to something stable. To Derrida, this is a *metaphysics of presence*, a spatio-temporal existence which is contrasted against an absolute being beyond time. This does not mean that our relation to the Other does not exist. It means that the temporal dimension never allows any stable self (Hägglund 2002).

Despite this last critique, I believe that we attribute an Otherness to other agents or polyagents, although it is not an absolute Other. We are shaped in relation to other polyagents within a network and this interaction creates a social identity, but it is not completely isolated from the physical body.

However, agency is distributed to other media (Gell 1998; Knappett 2006; Normark 2004a). Social identity is how the self relates to specific others. It is therefore not a personal choice since others give a person certain attributes. The social persona is where different social categories such as gender or age intersect. The basic performances by individuals have by some researchers been seen as a set of different roles which takes slightly different shape in different social situations. However, these roles tend to be seen as more or less deterministic (Fahlander 2001:70-71).

3.1.5. Some shortcomings of agency theories

It has been argued that the human agent is affected by the symbolic order into which he or she is born. Subjectivity and consciousness are created in the practical and discursive interaction between agents and materialities. Depending on the chances the agents are offered, they gain a shared habitus that make them reproduce the structures that form them. Was it so in the past as well?

A scattered set of evidence, hieroglyphic inscriptions or iconography gives us more information about a single ruler than we ever would know of a single "commoner". We cannot say much of a ruler's daily interaction, but we have a better known course of his or her whole life. Still, huge time gaps are followed by highlighted important periods in life (Normark 2004a). Seldom do we have this kind of information of "commoners". Gillespie (2001) assumes that the royalty exhibited agency as part of the larger social collective and she believes that rulers could not have acted in an intentional or self-interested way.

The ruler's events and actions were widely distributed in time and space. The events and actions of commoners were less widely distributed in space (and maybe in time as well due to shorter life expectancy). However, a focus on everyday social practice among past human agents is not a much better approach than the macro-level models since we automatically raise the scattered remains to a level not connected with particular individuals. The past actions were not acted out by an anonymous collective (Smith 2001). It is practically impossible to reach the single human agent in the archaeological record, unless in some isolated events that we seldom can combine with another event.

Not only do we not see the single human agent, this past agent's agency is reduced to a presently known stable agency to which we project changes. Thus, in relation to Derrida's critique of the metaphysics of presence, of the stable background (Being), it is important to note that a major problem in the agency approaches is the lack of an evolutionary perspective. If a human is an agent, a human subject located in a body as Giddens defines it, then clearly a chimpanzee is not an agent. Agency must also have an evolutionary component that affects the way discourses have been formulated. Was an individual *Homo habilis* subjectivated from a discourse? Will *Homo sapiens* always be subjectivated by discourses? What the agency approaches must assume is that, despite that they claim that the subject is constantly changing, it still retains something which other living beings do not have and therefore it must have been with us from the beginning. This is not reduced to genes as in neo-Darwinism but to persisting externalities, such as social structure or practice. This may not have any impact on the past thousand years or so, but there is a problem in agency theories in a "longer" temporal perspective. When human agency is used as basis for archaeological studies, there is reason to be cautious, as it cannot be known when it first occurred in the form(s) known today.

Grosz argues that the biological body has been forgotten in agency theories. She argues against the inscriptive and constructionist discourses in social sciences where the body only is of interest from a particular discourse and as a representation. Therefore, there is a need to return to the discourses that feminists and other constructionists have rejected; such as the one advanced by Darwin. Grosz says that the biological body needs to be included in inscriptive and phenomenological models since these models lack a material force, a corporeality (Grosz 2004:2-4).

This is obvious in an article by Adam T. Smith (2004), where it is argued that we should end the essential archaeological subject. By this is meant the end of an archaeology that assumes that there are stable classifications of difference that divide social formations, such as gender and class. The archaeological subject tends to be seen as constituted by an essential materialism. Identity is fixed from a universal sociology and the ancient subject is consumed by a social mass. In archaeology, the subject has been founded in its material needs that affect all relations (Smith 2004:3-4). Smith's main critique, also launched by the microarchaeologists (Cornell and Fahlander 2002b) and myself (Normark 2004a, 2004b), is that by using contemporary classifications of identity as a-priori starting points, archaeological analyzes are directed by burdensome concepts and create essential subjects (Smith 2004:10). However, Smith never questions the idea of *subject* itself, which is a modern construction. In his examples from Urartu (a kingdom/empire in southern Caucasia), he claims that since the fortresses near Mount Aragat rose from a large necropolis this evoked "a sense of mediation between the living and the dead, the immediate and the cosmic, providing a sensuous account of political authority that was strongly rooted in place yet most profoundly about transcendence" (Smith 2004:16). This is a generalizing argument that actually argues for an essential subject because how could he otherwise claim these things that are so general and non-specific, as they could just as well be used in any past or contemporary social formation?

We can never know the past subjectivity from within itself. All Smith's examples reduce people to the social mass he criticizes others for doing. No clearer is this quote: "Urartian regimes also ripped people out of place, severing the ties between subjects and embedded political traditions through forced deportations from one area of the polity to another" (Smith 2004:17). There are no single human agents here, just a mass (regimes, polity, traditions and people). This is also similar to deportation politics used by "Assyrians" and the "Incas". Smith knows this and automatically sees a connection and makes analogies without mentioning it. Thus, it is assumed that the actions affected the subjects in the same way, and if so, it was also the same essential subject. Here the subject acts as a metaphysics of presence. The problem here is archaeology's "humanocentrism", our search for something stable in human social formations or psyche. I would paraphrase Smith and claim that we need to see "the end of the essential human being".

We can continue to forever deconstruct and fragmentize words and concepts and explain them as social constructions. This is not a particularly "constructive" way. Is there no other way? Yes, if we go beyond the human agent.

3.2. Humanocentrism

Humanocentrism as a concept does share some similarities with anthropocentrism which is the centring in man. In anthropocentrism, the human being is the central fact of the universe and everything else has a reference to a hu(man) being. With humanocentrism I wish to focus on a slightly different aspect in social studies, particularly regarding archaeology. With humanocentric archaeology is meant the idea that:

- Models of the past are formed from a perspective that tries to explain the past human being or past social formation, that is, from what is *not present* in our contemporary materialities.
- Artefacts are forced into these models since materiality is seen as *passive* or inert. Thus, it relies on a *hylomorphic* view of matter.
- Materiality is *secondary* and human agents are primary in the archaeological discourse.
- In many cases, but not all, categories are believed to be essential and *ontologically secure*.

As seen in the last chapter, the key problem is the humanocentric belief in ontologically secure essential categories that can be used at all places and in all time periods. We can dwell in psychoanalysis

or world systems theory, but all fail to see the millions of years of really long-term biological evolution. The human psyche has never been constant and the same goes for world systems. So, why should we focus on something not seen in our present? We do not see past human minds or past world systems. We do have materiality but humanocentrists tend to make a straightforward connection between materiality and human agents or world systems.

The reason why the idea of the human culture needs to be initially removed from the archaeological data is that it would be easier to see what unites the human being with the changing material world, apart from basic matter. There is an evolutionary component of human agency which can only be reached if we see how the changing world relates to our static representations of it.

Most of the macro-level models in Section 1 have the purpose of explaining social processes in a simplistic fashion and such totalizing social theories often fail when researchers apply them in other contexts then in which they were designed (Turner 1994:116). This is a major problem for archaeology. Archaeologists have in this sense never come up with a social theory of their own (Joffe 2003). They constantly borrow from elsewhere. Thus, processes in the past have been explained through general social laws, usually from a socio-evolutionistic and linear perspective and other ideas borrowed from neighbouring social sciences. Social formations are described in mechanical ways and human agents are only passive recipients of transcendent macro-structures. The humanocentric models claim to demonstrate processes but they do not explain them from the perspective of our data.

3.2.1. Hylomorphic and humanocentric models of materiality

Materiality, the social dimension of matter, has in archaeology usually been seen as passive where human agents manufactured it and gave it meaning. This is a *hylomorphic* model of matter. By hylomorphism is meant that matter is created by external sources, that matter is inert and "dead". Hylomorphism relates to essentialism, that form pre-exists matter and also that matter is an inert receiver of eternal and external form (DeLanda 2000a:5).

In humanocentric archaeology it is common to see materiality from a hylomorphic perspective. This is perhaps not a surprise since people tend to have a teleological view towards objects and are more interested in what they are used for rather than what they are (Costall 1997). Social constructionist perspectives are versions of the hylomorphic model. However, constructionist approaches only give materiality three roles: deterministic (people need to obey the force of inert materiality), supporting human ingenuity (materiality is plastic and gains its forms by a free human mind) and resisting human action (to make it difficult for the human being to gain power of inert materiality) (Latour 2003:32). In constructionism, an object can only be seen as a certain kind of object if it acts according to the discourse that describes them (Rachel 1994). The constructionist perspective sets limits since we cannot reach the past discourses. In this text I will argue that even if an object is described as a chert axe or as a bolt of lightning, it always has a virtuality which is not dependent on the discourse(s). It is this virtuality that should be the starting point, not its meaning locked up in a presently known discourse.

In many hylomorphic approaches, materiality does have a great effect on social formations. Gille (1986) argues that social, economic and political "systems" shape and are being shaped by the technical "system". They belong to each other. Technical progress occurs only when systemic limits, such as production costs, have been displaced. Only then does a technical system move into another system. New technical systems emerge from the limits of earlier systems, which means that the progress is discontinuous (Barnet 2004). However, as I shall propose myself (but without the burdensome concept of system), Stiegler (1998) argues that no technical "system" is stable, it is always adjusting.

Ihde suggests that there is a hermeneutic relation with technology in which technology is

used to interpret the world and make it available (Eason 2003:169). For example, some historians claim that the modern "Western" worldview began with glass lenses and the possibility to construct telescopes and microscopes to see something never seen before (Englund 2003:143). The introduction of the shopping centre is also believed to have been important in the female liberation movement, as women became more independent (ibid:198). Here, materiality and technology are seen as instruments in changing social and scientific relations. This is true to some extent, but from the polyagentive perspective outlined later; this social context is often beyond our grasp in archaeological settings.

Another example of how a researcher can create a complex material network in order to explain certain material influences on human beings, is the connection between the steam engine and the zip. When railways were built in the early 19th century, the maintenance of roads was neglected. This allowed for the breakthrough of the bicycle. The bicycles with an enormous front wheel and a small back wheel were ideal for the bad roads as they made the ride less bumpy and kept the users high above the mud. There were also female bicyclists and since their legs were shown when they rode the bicycles, they needed longer boots that needed a zip (ibid:149). Such a network and genealogy is not easy to find in the archaeological record. We would never know what women could do or not do from the material remains above, had not written sources been available. The approach is also a search for connecting various technological changes, usually backwards in time. One could probably find an unbelievable genealogy between paper clips and space shuttles as well if one tried hard enough and added X number of chains or links.

Popular archaeological approaches to materialities in recent years have been various use-life and biographical approaches, which still are humanocentric. Processual and behavioural archaeologists have used the term use-life to explain morphological and functional characteristics of artefacts. Such an approach sees the object as passive and neglects the meaning the object has. The life histories of artefacts are sequences of behaviours, including interactions and activities (Lamotta and Schiffer 2001:21). The life history is the sequence of interactions and activities that takes place during the existence of an object (Schiffer 1999:22). Biographical approaches, on the other hand, focus on the way objects gain meaning by participating in social interactions. Such approaches show that meanings change throughout its history (Gosden and Marshall 1999:169). The capability of a material object to interact with its surroundings is always present and it gains a "biography" of events throughout its existence (Gosden and Marshall 1999; Holtorf 1998; Kopytoff 1986). Holtorf (2002:55) argues that material identities of things can change quickly. Material identities can begin and end by some people defining them as such and having others believe them. Biographies of causeways in the Maya area have been done before (Normark 2004c; Stanton and Freidel 2005).

Thus, social relations have been seen as to derive from knowing subjects. Material relations have, on the other hand, been seen as the relation between subjects and objects. In material relations, the subject is seen as the active one. However, people, materiality and technology are inseparable (Gosden 1994:20). To this I partly agree and to quote Latour: "Nothing, not even the human, is for itself or by itself, but always *by other things* and *for other things*" (Latour 2002:256, emphasis original). However, in order not to set the human being as the main agent I believe we need to try to separate them from materiality and see how and why one dominates over the other(s).

Foucault argues that technology is social before it is technological, fulfilling some social needs. There is a human technology that needs to exist before a material technology. For a technology to be possible, it needs to be taken up by material and human assemblages (Deleuze and Guattari 1988). In such an approach, technology refers to units of materiality and human beings and their needs. I agree with this, but at the same time we cannot really see all these needs in past social formations. Obviously, chert axes were used to satisfy the need to cut down trees and it had other uses as well. However, the human needs for causeways are far more inaccessible.

Some cognitive scientists maintain a human-centred approach to technology. Norman believes that everything that humans have invented in order to strengthen thought or action is an artefact, whether it has a physical presence and is constructed, or if it is mental and learnt. Like Bergson (1998), he argues that most of our intellect has evolved from our capability to make artefacts. Norman suggests that ancient technology fitted human bodies and now it is our brain the technology must correspond to. However, what works for machines does not apply for humans and the machine-centred technology has also affected our knowledge of the human. The machine is seen as perfect and the human is an erroneous organism that makes us imperfect in this world view. Therefore, the problem with our modern technology is that we need to act like a machine according to Norman (1993:5-11). Bergson's discussion of consciousness will be of importance since it deals with how intelligence has created a "static" view of the world that potentially could relate to a machine-centred view of the human being.

It is common to see materiality or technology as extensions of human agency. An illustrative example is the hammer being an extension of the arm, only noticed as an object when it breaks. For Ihde, who is a phenomenologist, technology consists of practices and artefacts that have a referential relationship with bodies like in the example with the hammer. Technology is intended for a body (Eason 2003:170-172). The human body is still the basis here and materiality and technology is secondary. We can also view technology as the Other (ibid:169), since we relate to it as if it was another agent. This is indeed what I originally intended with the idea of polyagents (Normark 2004a).

Yet another humanocentric perspective of how people relate to materiality has been proposed by Gell (1998). Although he does not discuss technology, he is of interest since he focuses on art and materiality from a non-symbolic perspective. Nothing symbolic is ascribed the nature of an art object since its nature is related to the social-relational matrix where it is embedded (ibid:6-7). In his approach, materiality is given human characteristics. Materiality is not just an extension of the human agent, Gell rather sees an agent distributed across material media. Gell argues that there are two aspects of our attribution of "intentional psychology" to material objects. One is an "external or practical aspect". We attribute a mind to others since we believe their behaviour to follow rules. If a human agent practically is able to manage an object, like a computer, then it produces a meaningful behaviour and it can be attributed with a mind and an intention. Mind is therefore not only an inner experience; it is part of the public domain. This is an "externalist" agency attribution in which social individuals are the result of their temporally and spatially distributed relations with others. Our inner personhood is a replication of our external relations and vice versa (ibid:222). However, contemporary human beings usually attribute the agency of others to a mental representation they have in their mind. This is the "internalist" agency attribution. There are two ways in which material objects can become quasi-persons. One is to stipulate the object as a social Other. The other way is to provide it with a *homunculus* or to make it a homunculus of a larger entity. This relativises the contrast between external and internal attributes of agency. The "inner-person" attribution of agency reduplicates internally the relations that exist externally (ibid:126-136). Although this is what once was partly meant by polyagency, it is no longer sufficient. It is simply not de-humanized enough.

The same as with technology, bodies are not present in architecture, yet bodies tend to be seen as the unspoken condition for architecture (Grosz 2001:14). However, cities and architecture produce, regulate and structure bodies (ibid:50). In fact, material boundaries make certain forms of co-presence impossible (Giddens 1984:121). The limits of the bodily space are to be found in materiality. During movement, the limbs and organs of the body determine its relations with things in space. These relations imply exfoliations of the space of the body. Relations to a thing set in motion certain organs. This process is the way bodies turn on to things, space, and living beings (Thrift 2000:39). It is in line with how I view polyagentive archaeology.

Materialities and intangibilities

Originally, I defined polyagents from a fairly humanocentric perspective (Normark 2004a). These polyagents were divided into *materiality* and *immateriality* (what I now call intangibilities). This distinction is still valid since the main criterion for polyagents was and still partly is that they are "capable of participating in causal interactions, or in other ways being grounded by entities that are so capable" (Ingthorsson 2002:7). Causation is here seen from a spatialized view, not from Bergsonian duration. The polyagent is in this sense similar to Schiffer's *interactors*. Schiffer defines three major interactors: people, artefacts and *externs* (phenomena independent of people, such as sunlight). Many externs become artefacts once they have been in contact with humans. Their interactors are combined to form *compound interactors* that may act as a single entity (Schiffer 1999:13). The compound interactor shares similarities with the polyagentive assemblage which I shall discuss later. As will become clearer later, this definition of polyagents is only valid in the actualized level and in human related conditions.

My definition of materiality for humanocentric archaeological contexts is this; *materiality is any object that human agents can be in physical and cognitive contact with and modify through direct human action*. The moon is not materiality in this definition (with the exception for astronauts). The celestial objects are still polyagents, but not material ones.

Most of the remaining part of the thesis shall deal with what humanocentric archaeology calls materiality or material culture; but what about that part of reality which cannot fit under my definition above? Clearly, shadows, darkness, light, temperature, wind, sound and humidity must be treated in separate ways since these cannot be modified by direct human action. Intangibilities affect other polyagents just as much as materialities and may structure social activities, they are not just epiphenomena. Blocking off sun light to create shade and cooler temperature creates intangibilities that may have been more important than its associated materiality. The importance of a humanocentric interest in intangibilities is that *human agents can be in physical and cognitive contact with intangibilities, but they cannot be modified by direct human action*.

Intangibilities that may be useful for archaeology are, for example, temperature, airiness and wind-direction that differ between the two nearby locations of Cahal Pech and Buenavista del Cayo in western Belize. These conditions affected the life of the nobility that seems to have moved between these two sites annually (Ball and Taschek 2001:188). Thus, intangibilities of site layout should not be ignored. Houston and Taube (2000:281) claim that they have found evidence for echoes and vibrant sounds in the iconography and suggest an increasing awareness of acoustics of buildings. Sound usually travels over plazas and up or down stairways. Englund points out that sounds of cattle became landmarks in the darkness, making it easier to orient in the Medieval European nights. Further, sounds in the open countryside would have been different from the crowded cities where the facades absorbed most of the sound or increased it. The audio level is never constant and changes during the day, weather and season (Englund 2003:18-27).

Thus, shades, darkness, wind and temperatures are important aspects that potentially could be included within a settlement analysis. Most archaeology is "daylight" centred and the night time has usually been ignored. However, in the dark night of the Maya area, the white surface of plazas and causeways may have affected people's behaviour making it possible to travel during the night since the white surface reflects light. The causeways may have allowed travel at times when walking on dark trails would have been less opportunistic (Normark 2004c).

3.2.2. The external quasi-objects – models and fictions

There are two things that unite the problems in macro- level based and the human based theories seen in chapter 3.1. It is the belief in *sharing* and *persistence*. These concepts are used to set the hylomorphic models of materiality in relation to the human being or the human being with other

human beings.

However, what do people really share and how does it persist? Do people share anything, such as a united culture, ideology or cosmology? How is this internalized in each individual or does it persist externally? These questions are not answered by many Mayanists, since they fall back upon an externally oriented culture-history and a generalized and superficial view of social formations.

Since *habits* (learned responses to certain situations) disappear with the death of an individual, what does persist beyond the human life span? Turner (1994:78) shows the way social scientists tend to argue. The argument is that it cannot be habits alone since it is assumed that we do not just learn from others. There must be a tradition or something similar that people share and that persist beyond individual habits. Since these are believed to persist, they cannot consist of habits; but what then do they consist of? The answer is usually an external structure or a quasi-object, such as ideology, culture or practice.

What is being neglected in most Mayanist models is that quasi-objects need to be both within and between people, otherwise it is not shared. The problem is that these quasi-objects are all believed to be collectively shared, that everyone possesses the same thing. A quasi-object, such as practice, is often interchangeable, or is at least affined, with tradition, tacit knowledge, paradigm, ideology, framework and presupposition. In such cases there must be a transmitting process where these collective quasi-objects become internalized into mind and body. This process is never explained properly (Turner 1997:345-347). The fairly easy way here is to use a theory like Bourdieu's theory of practice (1977) since it, on the surface, seems to bridge the gap between macro-structures and the single individual. Bourdieu's concept of reproduction means that habitus is copied inside new people. However, Bourdieu never explains how habitus relates to such psychological processes. Habitus just comes and goes in history (Turner 1994:47-50). If there is variation in people's experience of the world, then the model of sharing and reproduction of non-public collective objects falls apart. It would be the same case with the non-individual notion of difference, since there would not be any tacit thing that one group shared to compare it to another group (ibid).

A quasi-object exists without human agents and thus acts as an external and transcendent cause to explain changes. The external models seek invisible entities to explain what is visible (Pickering 2003:105). A practice is invisible. It can only be reached through inference and it is often indirect. Our access to practices, to be able to acquire shared tacit knowledge, must be done through other means. Sociologists have therefore extended the individual presuppositions to everyone in the collective. Since people share some beliefs or activities, they must also share some tacit beliefs. It is the tacit beliefs that are the causes for various actions. Turner wonders where the transmission takes place. Are presuppositions transmitted by imitation or do they pass through a medium of collective ether, which we call the culture, the social or the discourse? The most common way is to locate this medium in some sort of shared object which the individual internalizes. Another approach is to locate the practice in individual habits. However, since habits are individual, they are not shared. A third approach is to see the shared objects as having two kinds of causal powers, both individual and collective (Turner 1994:34-50).

Turner (1994:14) disregards the shared quasi-objects and wishes to reduce human beings to individuals with habits. Habit is not instinct; habit is intelligence which is an important distinction to be remembered when we eventually reach Bergson's philosophy (Grosz 2004:224). Habituation is the result of individual psychology and it is an individual possession. If an external performance becomes habitualized, it does not mean that the habits are the same but the externals must be the same. They have been trimmed to look the same externally. In terms of habits, similarity in external performance is not dependent on similar internal structures or external quasi-objects. There is no external structure that is internalized to become the same for all. People need to learn and acquire habits to be able to act in the world. These habits are often fairly consistent and predictable and can

therefore be manipulated (Turner 1994:14, 58, 112).

The mental habits are different for each person. They have been trimmed to look the same externally. People understand the same thing in different ways depending on past experience and feedback. However, this understanding may be similar to that of others. Turner does not believe that public objects (texts and materiality) are the place for what is shared, since in this way mysterious causal powers are attributed to these objects (ibid:19, 57, 74). This final point is, however, what archaeologists have to rely upon. But we need not attribute them with "mysterious" causal powers.

Turner could in this case be seen as a British empiricist, such as David Hume (1711-1776), which tends to be seen as quite far from Bergson. However, Bergson's distinction between intelligence (which includes Turner's habit) and instinct, and my distinction between actual ideology and virtual ideology can merge Turner with Bergson. Further, Deleuze (1991b) has characterized Hume as a philosopher of subjectivity since he wished to focus on how the subject is formed without any transcendent explanations and therefore he could only rely on habit. Deleuze's reading suggests that the human being is habitual and creative at the same time. All relations are external to the terms that define them, so there is no unified transcendent human nature. Deleuze sees subjectivity as a practical and empirist concept.

Although Turner criticizes Bourdieu and Foucault, he does not discuss Giddens, probably because Giddens argues that structure is a virtual order of transformative relations. By this he means that social formations are reproduced social actions that do not have structures, but they do have structural properties. A structure only exists as time-space presence in its actualizations and in memory that orient knowledgeable agents. In the social studies that Turner criticizes, structure is set outside time and space, outside its actualizations and memory. In these models, structure is also characterised by an "absence of the subject". Giddens does not see structure as external to individuals as it is based in memory traces and actualized in social action. This structure is both constraining and enabling (Giddens 1984:17, 25). For this reason, Giddens is preferable instead of Bourdieu.

3.2.3. Practice – a post-positivist mantra?

The common belief in archaeological and iconographical studies is that practices are transmitted through symbols and materiality, and that this is also partially transmitted to the researcher. This belief depends on the idea that the transmission proceeds in the media. Thus, the media carries something transcendent beyond its actual properties. This mechanism must be pervasive and also carry the practice to some people, but not others (Turner 1994:63).

When a humanocentric archaeologist finds an artefact, he or she often attributes it with a practice. The word practice is used in archaeology as a term including action, acts and a way of being. Practice as a quasi-object is a certain way of being, e.g. like the practice of writing, that then includes various types of acts. The practice of writing would be something that could be seen as stretched out over a life-time of a scribe, and a group of scribes whose dominating practice would be writing. As such, it is assumed to be an entity that forms a continuous whole that exists even when the scribes are sleeping or eating.

Practice has far from avoided the problem of causation (Fuller 1997:315). It "describes an object-like thing with causal powers and a role in the world of cause" (Turner 1994:11). Practice can be divided in two blocks; one that is based on hidden premises of deductive theories (shared presuppositions). The other refers to embodied knowledge. Many of the concepts related to practice are not as easily classified and that is why they have been so attractive. They can be discursive and corporeal at the same time, such as in Foucault's writings (ibid:2-3). Connerton (1989) also describes embodied and inscribed practices. The embodied practices are personal and experiential performances. These practices have a great influence since they have a sensory impact. Inscribed

practices are socially shared and transcend actions of an individual. These may be consciously recognized (Joyce 2000:9-10). It is the latter that is problematic as we could see above.

Turner (1994) argues that "practice" has become a mantra in post-positivist social science. If sociologists are not satisfied with a social formation's own self-justification, they tend to explain how things are done and appeal to practice, habit or tradition. The later Wittgenstein (1998) is seen as responsible for this direction. Practices are supposed to avoid the links to positivist social science, but practices are usually seen as causing people to do things in time and space.

Practice theorists often treat practice in a way similar to Kuhn's paradigm, as something external and determining. Here practice is sometimes a hidden premise or presupposition, which may then be accessible from a linguistic perspective. Practices are believed to be subconscious and resist conscious expression (Fuller 1997:316).

Past practice – the microarchaeological example

How is practice dealt with in archaeology, where practices are even more invisible than in other social science? I shall take a look at one of these approaches that is called *microarchaeology* (Cornell 2007; Cornell and Fahlander 2002a, 2002b; Fahlander 2001, 2003, 2004, 2007). I shall discuss some of the microarchaeological concepts since they also are of concern to the polyagentive approach. The microarchaeological theory is based on the premise that traces of repeated practices can be found in the archaeological record and that a social formation is a cluster of multidimensional networks consisting of actants (Latour 1993, 1999). An actant is anything that may cause people to change their action. Thus, action is not a human quality, but it is a union of actants. These actants form a collective where each actant in itself influences a certain process.

For the microarchaeologists, the only macro-variables in social studies are time, space and the multitude of micro-situations. Thus, macro-structures are the result of *structurating practices* in micro-situations (Fahlander 2001:23-24). Cornell and Fahlander suggest that practices in a local setting should be the basis for investigating archaeological data. Instead of using terms such as economy, ideology, etc., they see social practices in relation to materiality as *fibres* of structurating practices which are intertwined with other fibres of structurating practices within a locale. Their focus is on executed practices and not on structural constraints or individual experience (Fahlander 2003:16).

Most social action is routine and remains semi-conscious or non-conscious. By constantly being repeated and by being performed in "coordinated" ways by a number of people they may gain the character of being "intentional", although the agents are not necessarily aware or fully aware of this intention (Cornell and Fahlander 2002a:31).

Contradictory practices can dwell within a social formation or stretch outside the time-space frame a group lives within. Its effects can be found locally, regionally and globally and sometimes over a long period of time (ibid:63-67). The effects are the creation of structurating practices and *structurating positivities* (explained later) which interact, form and are formed by single human beings and collective groups in an integrated relation to materiality.

Cornell and Fahlander's solution to the abandonment of "society" is found in Sartre's writings. Sartre (1960) sees the social agent as active, and argues that materiality interacts with people in their daily social activities and forms, and is being formed by, practices and mental images. He sees social integration as a process of internalizing multiplicities. People form temporary *series* through their practice and these series relate to materiality. These series are temporally brief and include a plurality of agents who in a particular moment have one common goal or identity. This identity is related to materiality and a *serial* phenomenon is created, such as people waiting for a bus (Cornell and Fahlander 2002b:24). Individual acts to similar forms of materiality are what is meant by *serial action* (Fahlander 2003:8). After the bus, people form other series at the bank, the supermarket, the post office and in the street. This way of reasoning helps us to overcome the problem that sociologists

have encountered when they want to explain how habits become something else, as an obligation shared with others (Turner 1994:26). People have different reasons for joining something in the collective. Therefore, they might have different presuppositions (ibid:31). A serial perspective does not deal with these presuppositions or identities. Therefore, it does not matter what identities (woman, man, child, plumber, archaeologist, Swede, Mexican, etc.) or presuppositions the people in the series have. What is important is that they all are located at the bus stop. As such, the serial concept concerns the polyagentive archaeology.

The metaphor of a fibre represents a practice, such as knapping obsidian or waiting for a bus. As I see it, the length of a fibre (a structurating practice) also represents its extension in "spatialized" time. An act must have a beginning and an ending which means it is related to spatiality and temporality.

These series of structurating practices (waiting for the bus and shopping at the supermarket) are like the fibres of a *thread* (Wittgenstein 1998). These practices are constituted by elements which are difficult to change, the microarchaeologists label this as structurating positivities ("threads"). A positivity is the same as an actuality (a real thing). These form and are being formed by the subject and the collective in relation to the materiality. They are often unconscious and can operate in different fibres. Which elements are connected may be important because some fibres may dominate in a particular setting. New elements may replace a fibre, or a fibre may be missing. Every situation is related to the possibilities and limitations of general structurating positivities. In every act there are elements of the present situation and the past experiences of the agent, in which structurating positivities and practices are integrated; and also the agents' ideas of how the course of events will be related to future scenarios (Cornell and Fahlander 2002b:16).

The fibres may be of different lengths within the thread, but they do intertwine with other fibres or they may be broken. Several threads are intertwined with other threads which produces a thicker rope of events that may give us an alternative answer than a traditional use of modern categorizations would give us. Thus, a high-level abstraction such as "economy" consists of several fibres and threads, some which also can be found in "politics". For example, the fibre represents a repeated practice, such as burning copal incense. Several other fibres of related practices that persist through time are called a thread, and can be labelled "ancestor veneration" in some cases. However, the copal burning fibre can appear in other threads as well, such as "house dedication". In some cases, the copal burning fibre is missing in the "ancestor veneration" thread, but with the other fibres left, the thread could still be called "ancestor veneration".

Although the series are brief, the materialities that shape these series may be long "lived" (lasting longer than serial action), such as monumental architecture or causeways (Normark 2004a). Materiality may therefore act as nodes for the structuration of practices (Fahlander 2003:41). Fibres of social practices are likely to occur in several threads, although some fibres or threads may exist in a wider area and/or over longer periods of time.

Of most importance here is that practices can exist within one social formation at one time and place, and turn up at another place and time later on, without there being an invasion or diffusion. Thus, similarities and differences between monumental architecture, hieroglyphic writing myths, and cosmology relate both to the larger social network of the "elite", to local history and to the setting.

However, by introducing the positivities, Cornell and Fahlander (2002b) fall back on another external quasi-object apart from practice. Practices and positivities have become carriers of agency and not the other way around. Although Fahlander (2001, 2003) discusses Lacan and other psychoanalysts, it is routine practice which is used as the foundation in the microarchaeological theory. The idea is that practices can be detached from intentional agency and therefore can be studied at any location and at any time. Practice has become yet another abstraction just as economy and social organization have been used at any location and at any time. How do we define the

"essence" of a practice, that is, what do we need to be able to call something a practice? Otherwise, why should the practice of garbage disposal be a *practice* in the same way as the practice of chert knapping is a *practice*? What unites these practices? Is there an essence in practice?

Action, act, practice

We need to separate practice and act from action. They are not the same in my conceptualization. Only the latter is "real" and temporal, the others are subjective and spatial.

- Action takes place in continuous duration. It cannot be discussed separately from the body (human or non-human) and its connection to the world. Action does not consist of different intentions in a series or a combination of acts. Thus, it cannot be broken down into fragments.
- An act is such a defined and fragmented sequence of action which still relates to the agent. The act is spatialized action taken out of its duration. It begins and ends in an instant. An act has no meaning; it is only a mechanic movement and it is discontinuous from other acts.
- A practice is a set of combined acts that have been externalised from the agent itself. The act and the practice are similar in the physical motion. The practice is also spatialized and non-durational as is the act, but practice has taken the act to a level of continuity and persistence beyond the single human agent as a quasi-object.

Is "everyday practice," such as garbage disposal, a major part of life for the agents? Archaeologists are likely to think so, since it makes up a substantial portion of the archaeological record. Nevertheless, larger "projects" such as life, structure the agent's life in a different way than the instantaneous acts or semi-continuous practices, such as garbage disposal (Loizou 2000:46). A focus on brief serial action will therefore miss important information. Since the microarchaeological approach focuses on repeated brief serial action, which I define as acts, there must at any time be constant time gaps between these supposedly repeated acts. Can we grasp continuity in the archaeological data if we see the past from brief, but repeated acts? Cornell and Fahlander (2002b) use the threads that direct the fibres and make the fibres more persistent, but this is still another external quasi-object.

To me, an act describes something that is going on in a "now" moment, although the agent's consciousness is merging temporal horizons through memories of the past and anticipations of the future. However, each act can be divided into smaller and smaller units since there is no absolute limit. The idea of "practice" is therefore a product of archaeologists attempt to put the particular fragmented acts into a continuous context by adding isolated acts (frames) into a "cinematographic" view of moving frames.

We run the risk of having to divide certain acts into fewer and fewer fragments in order to define an event. These "atomistic acts" will only create more problems and therefore I believe we must attack the problem of sharing and persistence, continuity and discontinuity from another direction. However, if we remove practice from the archaeological agenda, what should be used instead? What can explain this continuity without acts and without a transcendent approach? We must find something that can be found in all archaeological data that relates to all ontologies. It needs to be immanent. If acts are discontinuous and past human agents are not available to us, what can be continuous and form the basics for archaeological thought? The obvious answer is simple; it is our artefacts and other material remains. However, this is only partially true; artefacts are not continuous either, although they, of course, are more continuous than acts.

To avoid the problem of continuity and discontinuity, we should study what is always present, and this can only be time itself. The *archaeological event horizon*, or what separates the past from the

present artefact, must be pushed back beyond any causal sequence so we can avoid the problem of trying to understand unknown beginnings of known endings. A "practice" consists of both temporal and spatial sequences. This is clearly not the case for the artefact; it may be spatially divided, but certainly not temporally divided unless we believe that it has temporal parts. We have to focus on something in which the loss of physical parts of an artefact still retains its presence. This is not practice; it is the virtuality of the artefact. However, this is getting us too far ahead. We need to face a few other obstacles first. I shall first look into something which the idea of practice is part of. This is social constructionism (Hacking 1999).

3.2.4. The limitations of social constructionism

The "postmodern" views of practices are that they are diverse and local which means that truth and validity also is local. This usually implies that it is shared within a group of people who are in contact with each other. The truths that derive from the shared practices are therefore socially constructed. However, the facts about practice are just as made up as other models designed by social constructionists (Turner 1994:9, 38).

Constructionism questions the independent world, accepted knowledge, essentialism and realism. However, social constructionism is a transcendental idealism in that all "natural categories" are seen as social constructions. The core of social constructionism is found in neo-Kantian theory of perception. Here, every individual's perception is structured by concepts and representations that are socially constructed (DeLanda 1999:30).

There are various forms of social constructionism. I use a "light" version in which I claim that our contemporary archaeological categories had little relevance for the people that once lived and therefore one should focus on what remains from this past. If we try to explain these past people through constructionism, we will not get far. Quasi-objects are social constructions. They are models of the world, but as such they are static and can seldom account for the changing world.

Therefore, Latour argues that nothing in constructionism works, neither the builder, the material used, its solidity nor its durability. Even if something is built by human agency, it does not explain what agency this is, since nothing is created *ex nihilo*. Constructions do not stand the test of time, only that which is not constructed will do (Latour 2003:31, 36).

Related to constructionism is the idea of deconstruction, and as Latour points out: "If X is constructed, then I can easily 'deconstruct' it to dust" (ibid:41). Construction and deconstruction go hand in hand although they are quite different. It is easy to deconstruct that which has been difficult to construct. Deconstruction show that no constructed system, method or discourse can be all-encompassing, singular and monolithic as it usually represents itself. Everything is open to its own deconstruction (Grosz 1995:61). Therefore, deconstruction tries to avoid the risk of presence whereas constructionism tries to describe as much presence as it can (Latour 2003:41).

Thus, constructionism is problematic and sets limits. How do we find what to construct from? What do all constructions share? Does this have any essence or presence? It needs to have an essence, something stable; otherwise the word construction itself is useless. Thus, the replacement of the positivist essences with social constructions is just a form of social essentialism.

The world is not only constituted by ideas and concepts, but also of materiality. By not recognising the nonhumans, constructionism has removed the unpredictability from scientific research and formed idealistic and reductive analyzes (Selinger 2003:149). Constructionism shares with essentialism the view that matter is inert, but they see it as coming from the minds of humans (DeLanda 1999:32).

In contrast to social constructionism that emphasizes openness from the perspective of human interpretations, Bergson and Deleuze sees the world as a creative and complexifying process of becoming. Constructionism is trapped within Foucault's *episteme of man*, but Deleuze

heads towards the posthuman world which consists of a multiplicity of nonhumans. Deleuze sees the extensive boundaries of individual entities not only as existing in human experience. They are real products of definite processes of *individuation* (*actualization*) (ibid:33, 41). This is the answer to the question from what can we construct? It is from the actualization of the virtual. This shall be discussed later.

3.2.5. Beyond humanocentrism – steps towards a virtual ontology of actual ontologies

The presented approaches so far, including the "macro-models", phenomenology, practice theories, etc., make disparate humanocentric statements as they focus either on subject, object or being-in-the-world. What we need is a way to merge different ontologies from what can be argued to exist within these ontologies, in which the human is not separated from the rest of the world. Thus, phenomenology, structuralism and quantum physics should not be seen as contradictory statements of the world. They are all part of existence and if combined, they can contribute to an understanding of the world.

Ontology

An ontology concerns the entities that is believed to exist and that populate reality. DeLanda classifies the ontologies into three groups. Some believe that there is no reality beyond the human mind ("idealism"). Others believe that the objects we observe do exist beyond us but they are sceptical to the idea that theories are independent from social constructions. Some believe that there is a world completely independent from the human mind. The two first perspectives deal with *phenomena* (the way things appear in our mind), and the latter also discuss *nuomena* (the things in themselves). This latter ontology is a realist ontology to which Deleuze belongs (DeLanda 2000a:1). However, Deleuze does not believe in essences or transcendental entities like the "naïve realists" do. Deleuze rather exchanges the idea of the general and the particular with the universal and the singular (ibid).

Wittgenstein (1998) belongs to DeLanda's second category and he argues that our statements are either expressed beliefs or pictures of the real world. People give different versions of what is happening in the world. These are like *language games* with separate vocabularies and rules which fulfil different social roles. The language games are not justified by human agents, but they are played and sometimes understood (Bintliff 2000:155-159; Monk 1990:307). Different ontologies create theories with different versions of realities. There are many contradictory ontologies and no one can be said to represent the "absolute truth". Instead of refusing different approaches to study the social, we should try to combine them, based in an ontology that allows this.

An attempt to do this has been proposed by the anthropologist Göran Aijmer (2000, 2001). He summarizes three different, but equal, scientific orders which have their own discourses and presuppositions in studying social order. These analytic constructions are based in the *realist*, *iconic* and *discursive* orders. Aijmer's *symbological* project is a merging of operational functions, semantics and social pragmatics. Results in one ontological order can be used in another and thus generate better understanding of social order (Aijmer 2000:2).

To begin with, we have an *operational order* with realist presuppositions. Practical tasks make people form certain collectives for survival. People that perform one such task can be called a group, such as an "eating group" or a "cooking group" (Aijmer 2001:68, 72). What is important for us here is that these groups form in relation to materiality, and may in some cases be related to serial action (Fahlander 2003). These groups are more likely series in Sartre's terminology.

A second ontology is the iconic order which focuses on symbolism of iconic codes and its use. This order deals with powerful expressive forces. The acquisition of iconic symbolism is a conscious act but this symbolism is not language based and therefore it lacks referential meaning. The iconic codes are expressive devices that interact to form messages. People who reproduce

images or materiality are familiar with the iconic grammar. The information about the icons lies in the icons themselves. The images manifest intuitive cognizance and are separated from everyday life. They create their own realities and form unintended messages or motives which are contextual and therefore are difficult to be retold outside an iconic event. The iconic codes are used to form a world that is different from the practical world seen in the operational order. Aijmer suggests that icons occur in real time, but in the iconic order, the icons lack temporality (Aijmer 2001:69, 73-79).

The discursive order relates to intentional pragmatic human action and conversations. Social discourse includes language and other sensory communications (iconography, smells, sounds, etc.). This order also includes several alternative stories (ibid:69).

The operational, iconic and discursive orders have a distant connection with the *ethological* order. This concerns the realist ontology which emphasizes the biological or genetic realities of human action. This order includes thinking, memory and the physical effects of living in a world as it is described by physics, geology and meteorology. Biological evolution may be included here since the iconic codes may be older than language (ibid:70).

What then is needed to merge these orders? Aijmer argues that we need to agree upon a universal human being to a minimal degree (ibid:71). There may be differences in certain social formations depending on which ontology is dominant. The "West" has emphasized a discursive order whereas "South Chinese people" emphasize the iconic order through the use of geomancy. However, the orders intertwine with each other. For example, we can study how the realist existence affects the discourses among certain groups and give them symbolic representations (ibid:81-82).

Representations

What is this universal in the human being that Aijmer seeks? How do we define this universal, particularly since there is an evolutionary component? It is quite obvious that Turner's individual habits of human beings cannot be the foundation for an ontology of ontologies since habits are not universal. In order to create a universal human being we need to reduce all differences and variations to a static representation that works everywhere and through all history. Thus, what joins Turner and Aijmer here is that they both follow a representational model of the world.

Like Turner and Aijmer, most cognitive science focuses on representations and it is from these representations that we form an understanding of the world. The capability to cognition is believed to come from abstraction and representation. This is our capability to represent perception, experience and thoughts in another medium. The representation system consists of the represented world and the representing world (Norman 1993:47-49). For example, our mind represents a mental image of a causeway. This representation can also be represented, such as in the word causeway, the hieroglyphs for sakbih, or in a photograph of a causeway. It is through these meta-representations we generate knowledge and find patterns in the representations that we would not find in the world (ibid:51). The problem is that we tend to think around the static representations rather then what they represent, which is a changing world.

In order to merge the ontologies Aijmer mentions I will take another perspective than he, Turner and Norman do. This perspective is to be found in virtuality and its actualizations, and not in the particular individuation or representation called the human body and its representational capabilities. Like Wittgenstein, Bergson (1998) believes that there are different kinds of knowledge, but the strength with Bergson is that he does not reduce it to static entities or levels as representations and languages do (however, Wittgenstein criticized Bergson for this). What positivism and some postmodernism share is therefore the idea of representations as the way to access the real. Some positivists use mathematics and some postmodernists use discourse as different representations. As a contrast, Bergson argues that the real is what contextualizes action. Representations only show regularities that have been removed from the real (Grosz 2004:191-193). A representation is static,

an actual multiplicity.

The basics in the ontology of Deleuze

An alternative approach would be to follow DeLanda's Deleuzian inspired suggestions to eliminate various ontologies and form one single ontology. DeLanda rejects the materialist ontologies since they consist of transcendental essences and eternal archetypes. Ontologies based on abstract classes, such as quasi-objects, are also rejected (DeLanda 2000b:1). DeLanda creates a *flat ontology* in which the ontological differences are reduced to an ontology concerning emergent property. The whole is greater than the sum of its parts which makes it impossible to reduce the whole to the parts. By this is meant that the human being cannot be reduced to biology, biology cannot be reduced to chemistry, chemistry cannot be reduced to physics and physics cannot be reduced to mathematics.

Deleuze flattens all the distinctions above into a virtual plane of consistency/immanence in which there is no opposition. The *plane of immanence* is pure immanence. Therefore, it has no substantial division, it is immanent only to itself. Immanence is substance itself. This also means that the mind is not separated from the bodily substance. The plane of immanence is a formless self-organizing process that diverges from itself and, on top of this plane, a rhizomatic network is formed (Deleuze and Guattari 1988:266).

Therefore, a concept used in research should not be an empty form that needs to be filled with some transcendent content, such as a predefined quasi-object like the "Classic period Maya culture" that is filled with Long Count calendars, ballcourts, stelae, etc. The lack of these entities would become an anomaly in humanocentric archaeology. The concepts should rather be affected by other concepts, bodies, etc. There is no need for transcendent concepts that explains what is beyond the immediate. This is because immanence is not just within, but also upon and of. A causeway is not just within a larger polyagentive network, it is formed from the network. The causeway functions and operates upon and through the network (DeLanda 2000b).

DeLanda (2002:158-164) has made a list of 7 main components in the ontology of Deleuze. Bergson's ideas, which will be my focus in chapter 3.4., can be fitted into (1), (6) and (7). The first (1) component is the abstract *intensive spatium* where intensities (differences in kind, explained in chapter 3.4.) become organized. It is a virtual continuum of multiplicities in a non-metric (non-Eucledian) space. This is also the machinic phylum and the plane of immanence in some of Deleuze and Guattari's texts. As shall become apparent, I deal with the polyagentive ("machinic") phylum in the empirical part of the discussion, but the phylum is indeed a virtual process.

After this follows four components that partly relate to the concept of polyagency (which lies in-between the virtual and the actual). However, polyagency primarily relates to the interaction between actual (spatial) entities, such as the interaction between a human agent and an artefact. From an archaeological perspective, the polyagentive processes that affect entities are similar to those that form the entities from a pure physical perspective. The process needs to be actualized, made into a detectable trace for the archaeologist. However, the following components of Deleuze's ontology are part of the physical processes and do not exactly correspond with polyagency, which is explained in chapter 3.5.1. The components are; (2) Intensities form multiplicities and individuations. This is the becoming of the world; (3) There is a *line of flight* that creates a communication between the virtual multiplicities; (4) Linkages and movements form a system or a network; (5) There is a self-organizing formation of spatio-temporal dynamism by singularities (the *intensive*).

The intensive processes are followed by; (6) The differentiation of the intensive into qualities and extensions (actual multiplicities/polyagents) or the geometrical (Eucledian) world we perceive; (7) Centres of envelopment, such as codes, which creates differences between the organic and the nonorganic.

This is the fluid and monistic frame for how matter and materiality emerge, processes that

are similar in the social world. This is a posthuman world. In order to understand the decentralized human being in a posthuman approach, I believe it is still useful to maintain different non-hierarchical ontologies from a constructionist perspective that may have been relevant to the past human agents. These constructions derive from actualizations, but they are all joined in a rhizomatic network that unites different multiplicities that can be interpreted from different ontologies. However, from the pure polyagentive ontological perspective, a flat ontology of virtuality is of basic concern. Most of the remaining Section deals with how to reach this basis. Only with the terms actual ideology and virtual ideology do I return to Aijmer's discursive and iconic ontologies.

3.3. The archaeological event horizon

In order to reach an operational theory that sets change and materiality at its core I need to present an alternative philosophical discussion. This begins with time, the dimension of change. We need to investigate how different conceptions of time have created the understanding of the world in which most humanocentric archaeologists work, in order to break away from them. After outlying the spatialized time that dominate in science and archaeology, I will continue in chapter 3.4. with Bergson's and Deleuze's conception of the virtual that breaks with this tradition. The chapters that follow 3.4. deal with the central concepts in the empirical part of polyagentive archaeology.

Temporal movement

The representations we have discussed earlier are static. Representations are therefore spatialized and atemporal ways of thinking that relate to ontologies based in substances, essences, solids, constructions, etc. The polyagentive archaeology relies on temporal movement. The path I take to find the basis for an ontology of ontologies, from which constructionism constructs, is the one that was outlined by Bergson and continued by Deleuze. Deleuze also includes ideas from Baruch Spinoza (1632-1677) and Friedrich Nietzsche (1844-1900). Ideas from Bergson and Deleuze have now diverged into several other fields by for example Elizabeth Grosz, Manuel DeLanda and Keith Ansell Pearson. Polyagentive archaeology is greatly inspired by these philosophical directions. I did not originally take this position when I followed a spatialized view (Normark 2004a).

To speak with Bergson's and Deleuze's terminology, the difference between humanocentric archaeology and polyagentive archaeology is that humanocentrism deals with being, identity and the single. A polyagentive approach derives from the view that: "being can only be attributed to becoming, identity can only be said of difference, and the one can only speak of the multiple" (Pearson 1999:16).

As outlined in the preceding chapter, humanocentrism focuses on what is not available in our archaeological record, what lies beyond an imaginary *archaeological event horizon* when human action ended in relation to the artefact (if we neglect post-depositional processes). This event horizon is considered to be a void that needs to be filled. It has been shown that researchers have fallen back upon ideas of persistent and static external quasi-objects, particularly practice and culture, to explain how "material culture" is reproduced through time. These quasi-objects are believed to continue across this event horizon. Time, in such approaches, is often neglected; not considered a problem. Surely it would be advantageous to focus on something unaffected by time, but this cannot be found in anything external to what we study, it has to come from within what we study. *It needs to be time itself.*

In this chapter, I shall focus on the prevailing view of time in archaeology; the spatialized time. This is seen in the ideas of persisting externalities, or transcendentals, such as practice or world systems. The next chapter will outline the idea of pure duration. It is important to thoroughly describe the common problems seen in scientific and subjective views of time which affect humanocentric archaeology, as we all see time in a spatialized manner; meaning that time can be

measured, divided, added and isolated as if it had spatial characteristics.

I am concerned with how changes occurred in real time rather than with a retrospective approach that investigates processes backwards from something known and that tries to explain changes from this later form (Pickering 1995:3). This looking back is what archaeologists tend to do. It is the search for what lies beyond the artefact, the unknown causes that is formed into known causes. Central to the polyagentive archaeology is therefore a reversal and even an initial rejection of causal relationships, towards a forward looking archaeology were the past future was open.

The idea of spatialized time runs throughout all archaeology, even in the ideas of serial actions proposed by Cornell and Fahlander (2002b). Their fibres extend in spatialized time, sometime long or short, intertwined with other fibres within a thread. Thus, there seems to be a continuous flow of acts, but how does this come about if the serial phenomenon itself is brief and is being performed by separate agents and the fibre in itself is isolated, externalized from another fibre? The spatialized temporal models cannot explain this.

I shall begin with what "processual" and "postprocessual" archaeologists agree upon. As will be shown, they are all preoccupied with the human agent behind the artefact, behind the archaeological event horizon; beyond what can be seen. This characterizes all humanocentric archaeologists. After laying out the archaeological approaches to time and the existential and phenomenological views of subjective time, and also the real-time approaches by McTaggart and his followers, we will head into Bergsonian duration in the next chapter.

3.3.1. Archaeology, time and polyagents

The archaeological record may sometimes show what we believe to be a semi-continuous flow of superimposed strata and interfaces (Harris 1989). However, a structure, such as a temple, which contains remains from over a thousand years of different construction phases, is a problem. The supposedly indicated acts, the relation between materialities and humans, can only be detected at certain intervals, such as when a rebuilding or another modification was executed. Thus, there may have been decades between similar construction activities. There is little indication of other activities, such as dances or rituals between the episodes of construction. These events are added by the archaeologist, who fills the voids. Therefore, a temple does not show a continuous flow of "routinized practices" in a continuous flow of events in time. There appears to be temporal voids in the stratigraphy. It is quite common, and probably unavoidable, to compress temporally divided events into one single event. There is no consensus among archaeologists to what extent events can be temporally separated for them to still be compressed and treated as the same. The critical issues here in the archaeological record are time, continuity, voids, ruptures and discontinuity.

Time and the archaeological record

Maya archaeology, both mainstream culture-history and the processual approach, share much with positivist historiography. They believe the past can be reconstructed through material artefacts, that the past is like the present and that we can learn more about our present by knowing the past (Grosz 2004:114). Like culture-history, processualism discusses grand social units or systems in which real duration is unimportant and the focus is usually set on slow processes. In processualism, materiality has often been seen as tools for exploiting environmental resources. The material properties have been seen as primary and meaning is something added to it. For Binford (1981), the archaeological record is the static remnant of past dynamic systems, distinct from our contemporary social relations. The archaeological record must therefore be treated differently than the ethnographic record (Murray 1999:15). Apart from environmental causes, the archaeological record is an effect of human activity and as such it can never be distorted (Binford 1983).

Schiffer (1976:12) argues that there is no relationship between a past social formation and its archaeological record. He points out that processual archaeology uses a straightforward correlation

between the archaeological record and past human behaviour; the archaeological record is seen as a fossilised moment in time, very much like Pompeii (Schiffer 1987:5). Processual archaeologists try to understand the processes in which dynamic actions formed a static record. As a contrast, Schiffer sees the archaeological record as a functioning whole and he differentiates between systemic contexts in which materiality circulated before it was deposited in the archaeological context and was affected by "natural" and "cultural" processes (Schiffer 1987).

Postprocessual archaeologists have reacted against the scientific and "objective" use of time in processual archaeology. They rather focused on subjective time developed by phenomenological and existential philosophers. Hermeneutics, structuralism and post-structuralism have also been influential in these theoretical approaches. Material objects are seen as active because they have symbolic meanings. Objects are either seen as texts that can be interpreted in a way similar to reading a book or as objects which affect human perception and cosmology. Subjective time and "social" time, especially the way it has been formulated by archaeologists following Heidegger, have dominated the field of time in archaeology (Gosden 1994; Karlsson 2001; Thomas 1996). Here, the archaeological record has been seen as one of continuum, since the remains of the past continue to affect later people, such as archaeologists. In studying the archaeological data, these researchers have emphasized people's subjective perception of time which is not always successive and cannot be measured. I find Heidegger of little use to our understanding of the archaeological past. He is more relevant for subjective time which is problematic when we discuss the past. The focus on subjectivity has made postprocessual archaeology even more humanocentric than processual and culture-historical archaeology have ever been. It attributes the archaeological data with subjective qualities it does not contain. The postprocessualists themselves are maintaining an unnecessary dichotomy between the "scientific" or "objective" time and the "personal" or "subjective" time.

I am rather inclined to follow the ideas developed by Schiffer concerning the archaeological record, but with substantial changes. Undoubtedly, the objects had meanings, but these are gone, they are beyond the archaeological event horizon. For polyagentive archaeology, objects will initially be approached from a perspective where they are actualizations of the virtual, rather than having material or functional properties (the processual approach), symbolic meanings (the postprocessual approach), or being traces of executed practices (the microarchaeological approach). These other qualities have to be dealt with secondarily and in different ontological orders.

Chronology is critical in archaeology, especially as it is based on artefacts, usually ceramics; our basic reference points in the archaeological record. Archaeologists have used the "principle" of typology for finding reference points in order to describe things (Bachelard 2000a:89). We use objects to define a chronology in which we believe certain events occurred with certain social meaning. Time in archaeology is often seen as an abstract container of events, lined up in a continuous sequence associated with our reference points. Discontinuity in the chronology is passed over as lack of evidence, a lack of reference points. The reference points are complemented with non-empirical data to make the data appear more complete or "full" and continuous than it is. Archaeologists are therefore constantly ignoring the discontinuity apparent in the present archaeological record (Normark 2004a).

The archaeological record, as it appears to our intellect from a humanocentric perspective, is not one of continuous duration, but rather one of seriation from discontinuous instants (being our reference points). This means that artefacts are not traces of a continuum of human activity, they tend to be represented as instantaneous endpoints of acts. As such, the artefacts can never tell us how the acts began, that is, effects in the causal milieu never give answers to their causes. However, although acts are discontinuous, time itself is continuous; there can never be empty time in true duration. Thus, the temporal voids are illusions. There is no past void, but most of us think there is a void since we rely on a humanocentric view in which the past human agents seem to be gone. Archaeologists wish to populate and fill this void with human beings.

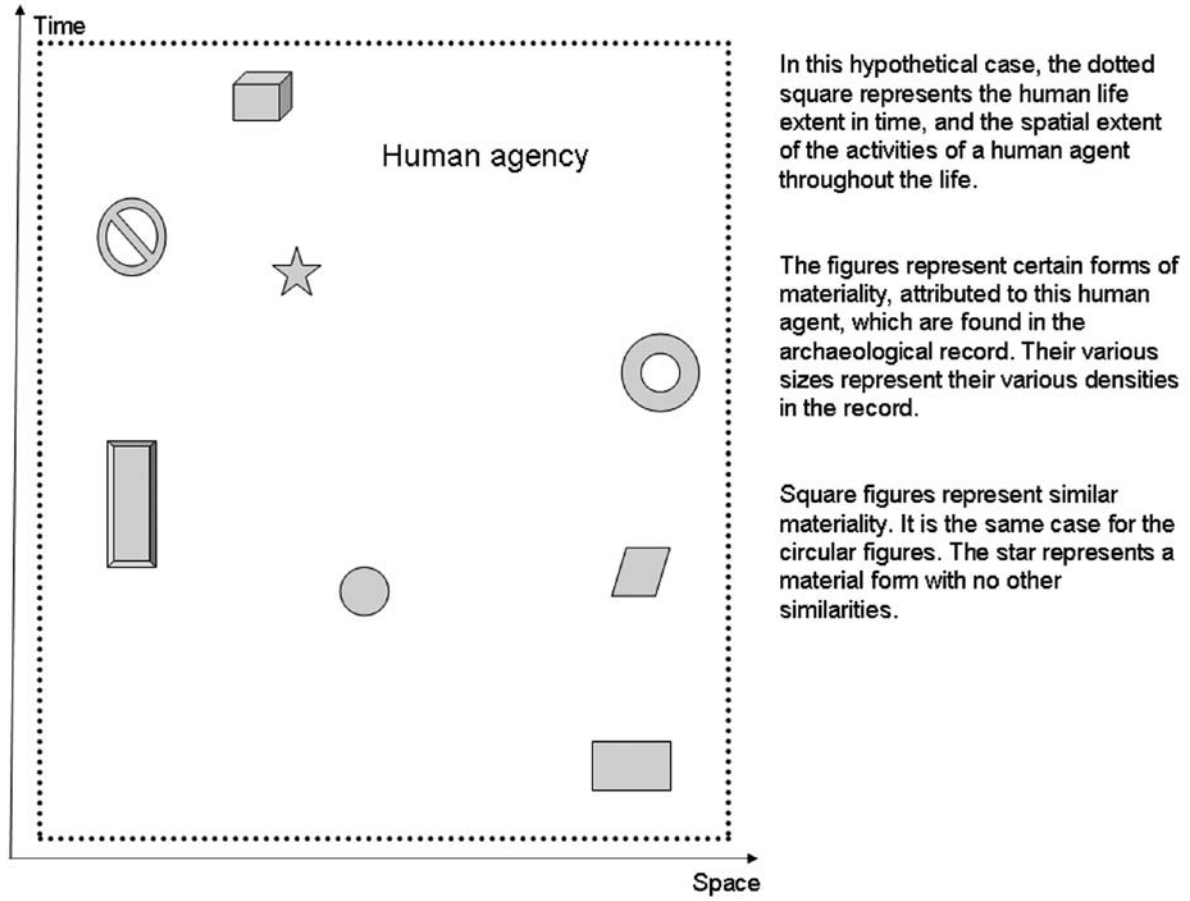


Figure 18. The humanocentric view of archaeological objects.

Event horizons and transitions

The archaeological record has sometimes been compared with the fossil record (Binford 1983; Schiffer 1976; Thomas 1996). In the fossil record, palaeontologists can distinguish different individuals as examples of species of animals or plants and categorize them into larger groups, families or classes. This is similar to the typological approach in archaeology. The slightly skewed picture palaeontologists get for being short-lived beings who study a small and random sample of past species (or rather individuals), can be applied to archaeologists as well. We do not experience the slow process of biological evolution itself. Our parents are not of another species. Two thousand years ago we were the same species, but maybe not two hundred thousand years ago. The genetic changes are usually slow (even if they are "fast" geologically speaking). Species can only be distinguished if we cut out an artificial sequence or a point of time of the past and make it spatial (Normark 2004a).

Even at certain points in "spatialized time" there are species which can mate with each other and produce sterile offspring (such as when a horse and a donkey produce a mule). There is always some variation within every species and form, since species are not constituted by essentials or forms. In fact, the species is a transcendental illusion, since the movement of life is to produce individuations. A new life is not just a recapitulation of earlier forms, it creates new conditions (Pearson 1999:93). A species is just a population of interbreeding individuals that have a common descent. Darwin explained why the species are fairly stable in the long run and still maintains a great variation of individuals, by claiming that species are not essential, the individual is essential. This essentialism has today been replaced by genes. In any case, the individual differences remain irrelevant to natural selection (Grosz 2004:42-43). If we had the opportunity to travel in time and follow each "individual" from the "origin" of life to now, we would not be able to see when one

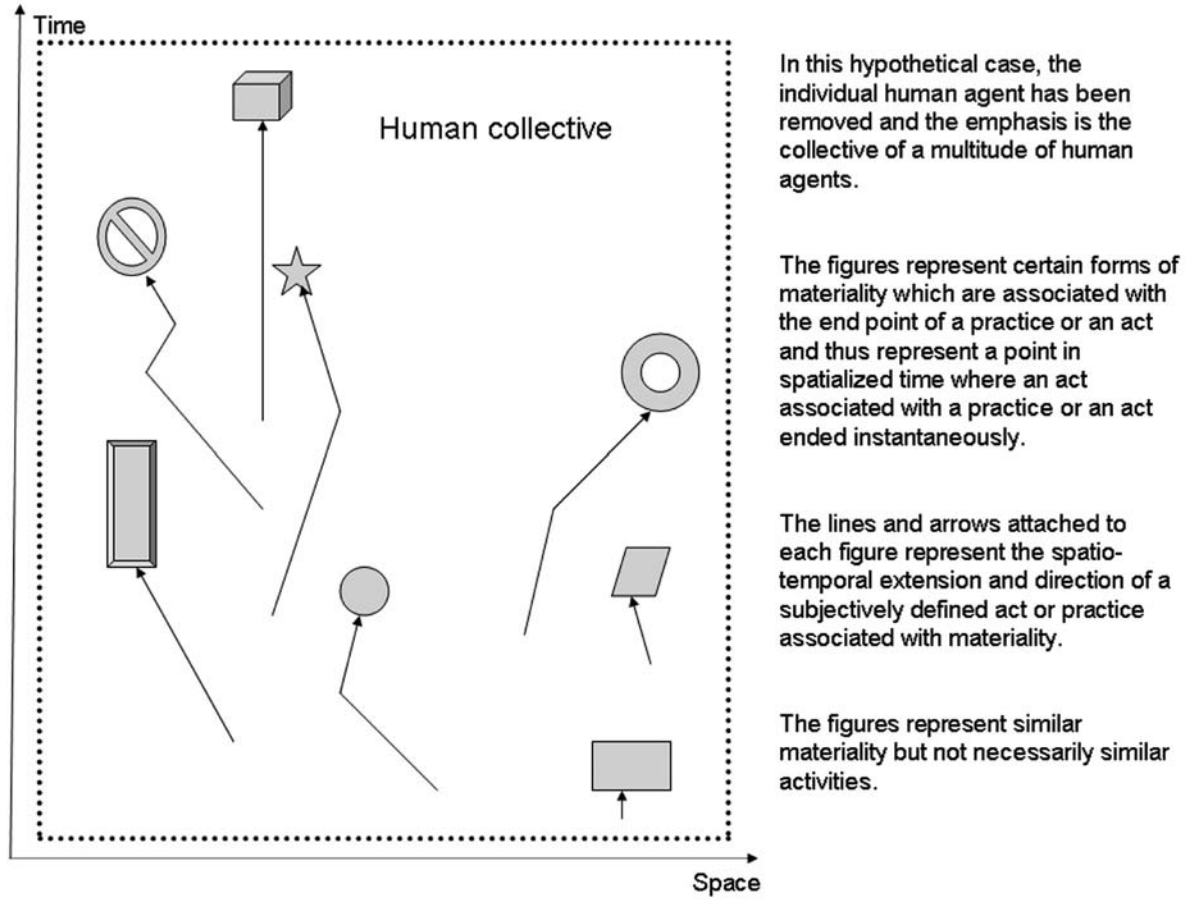


Figure 19. The assumed final trajectories of acts behind the archaeological objects.

species turned into another. There would not be any species in a continuum. Only an isolated "event horizon", an instant, as when an individual dies and is covered by sediment, makes it possible to generalize fossilized individuals into species. When we label present species it is also in an instantaneous "now".

Although animals are entities quite unlike artefacts, which are manufactured by humans, I believe I can make a brief general analogy between them if we relate the artefacts to the events associated with them. Applied to archaeology, this means that what we are seeing in the archaeological records are only events as "points in spatialized time" (only literally, not in reality), made possible to distinguish and categorize because of their instantaneous endings from a human perspective. This is how the archaeological record appears to us. It seems to consist of "snapshots" of human activity, and not of a continuum. These snapshots are separated from what went on before and what went on after by the instant moment when an act ended. We cannot see beyond this event horizon. Thus, a building with a long construction history has "isolated points" or "segments" of materiality (our archaeological reference points) in which the past acts are deprived of their temporality and spatiality. Some other social activities took place before and after the formation of the materialities we study, but these events are isolated as far as the material remains are concerned. The causes for the artefactual effects are not there directly to see.

Thus, the archaeological record at best indicates only the spatial endpoint of a past act that began sometime before the formation of the archaeological record (figure 18 and 19). The whole temporal and spatial sequence of the preceding act is no longer visible. However, when the archaeological record is preserved it is not the fossilisation of the past present, it is still under the impact of formation processes (Kent 1987; Schiffer 1987), and it can only be viewed in the present.

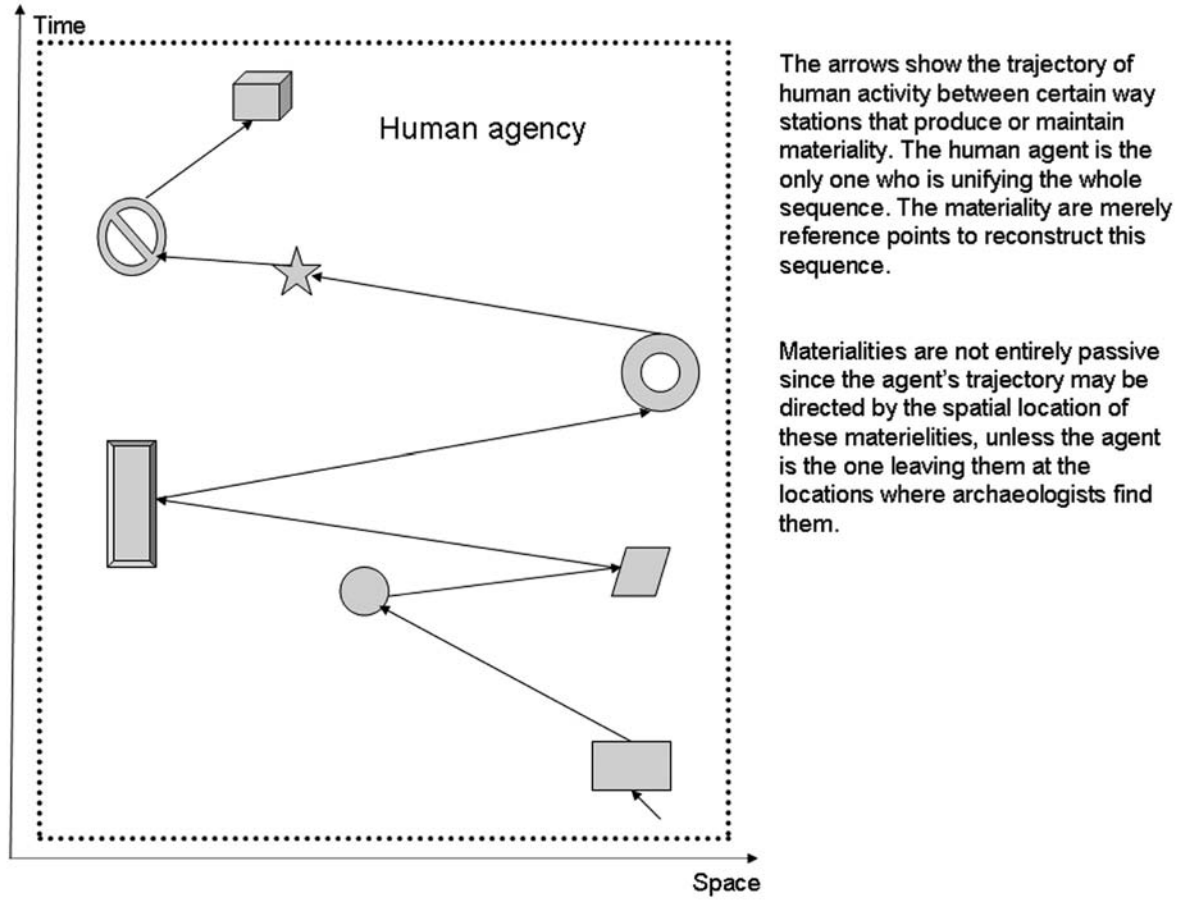


Figure 20. The assumed trajectories between different polyagents.

Trajectories

When a temple was modified it had to cease some other activities to be able to begin new sets of acts. For the ancient subject, this would have been a continuous duration.

In the archaeological record we would get a stratigraphy that indicates the instantly finished acts, but not the continuous acts, unless we transform them into quasi-objects, such as practice, that is projected behind the event horizon. Every stratum in the temple would represent the last point or the very end of an act. How should we then find a link between these materialities, if they are seen as isolated or discontinuous from other acts as different fibres? How do we decide a turning point or a node when one act was replaced by another? What is the frame of an act?

I believe that Hägerstrand's (1970) time geography is a good way to describe how a set of social acts replace each other. Time-geography sees the human being as a "biographical project" in which human agents are situated along time-space paths (Giddens 1984:83). Whereas Hägerstrand shows time-space paths as a linear movement, Giddens and the microarchaeologists want to include a return of this path since it reflects the repetitive character of daily life (Cornell and Fahlander 2002b; Giddens 1984). Agents use typified schemes or formulae in their daily activities to be able to negotiate their situations (Giddens 1984:22). Encounters come as sequences that give form to the seriality of everyday life. The duration of life is framed by encounters that open and close in time and space (ibid:73).

The *trajectory* is the structured movement agents, series, or groups of people perform in space and time (figure 20). There are some constraints, such as that a person cannot be at two places at the same time or perform causally incompatible acts at the same time. These temporal realities are the material axes of human existence. The physical environment where agents move around

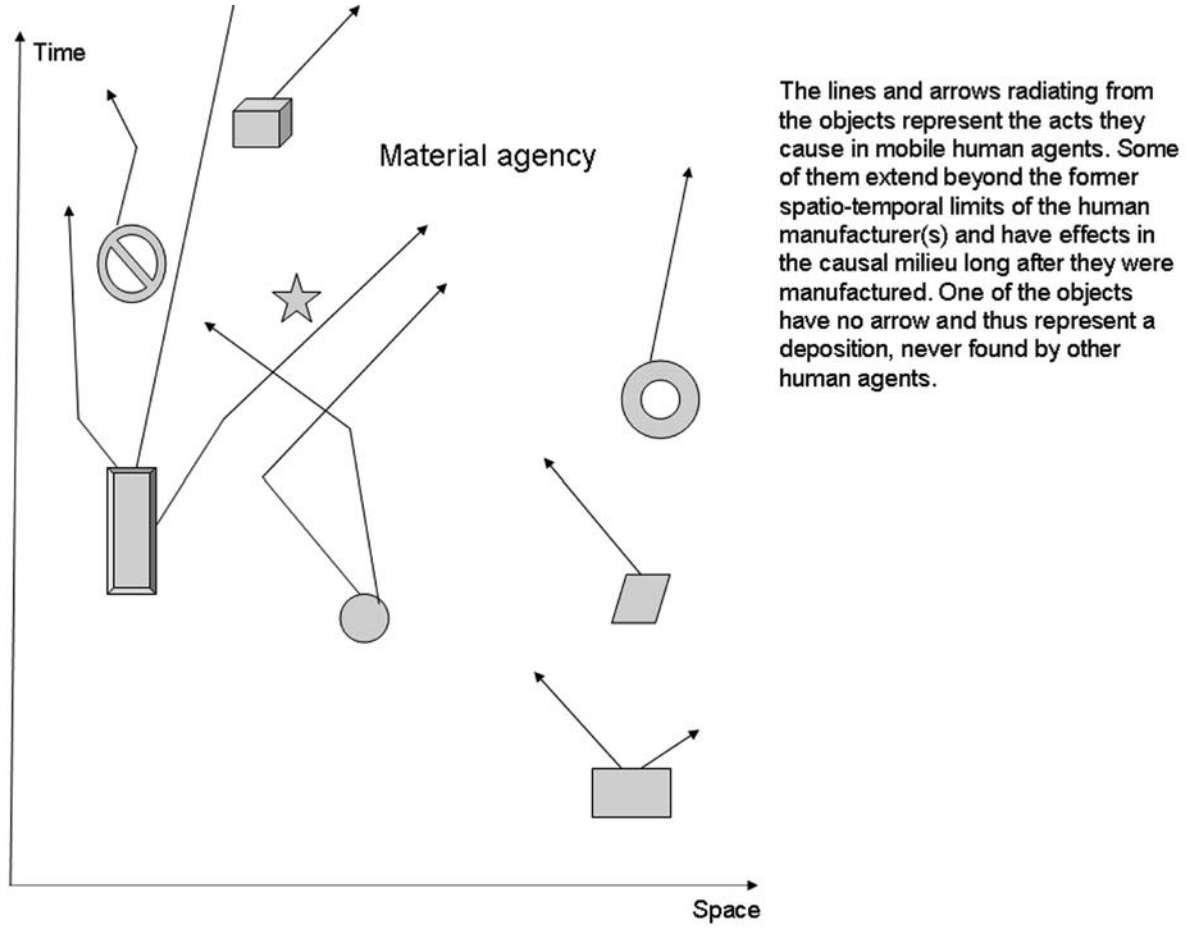


Figure 21. Sequences of actions caused by materialities.

interact with the capabilities of human agents. The interaction between agents in time-space creates "bundles" or encounters at certain stations (ibid:111-112).

Hägerstrand also uses the concepts *way station*, *project* and *domain* (Gell 1992:191). The project is the activity an agent or a group performs at a way station which is a unit of time and space (such as a mountain, a midden or a causeway). A movement between different stations is also a movement between different types of control called domains. The physical structuring of the trajectories or courses of the agents forms human agency, social interaction and discourse at various way stations of the courses. Our behaviour is associated with entities that emerge from where interaction takes place. Such entities are human agents, solid materiality, divisible materials and domains (Giddens 1984:115).

However, setting aside enabling or constraining aspects; do we ever see this course in the archaeological record other than in a coarse trajectory of a collective quasi-object, such as culture? The archaeological record derives from many events and from many agents. A midden along the course is compiled from a multitude of acts, most likely not all derived from one single agent. Many agents have added to the midden at different times. The non-available agent who performed a set of acts at different way stations is the one who unified a certain temporal sequence, a trajectory, in Hägerstrand's sense, but this sequence included events at several places, maybe not visible to us. If we only look at a set of acts performed by different agents, the gaps between the same acts at this particular midden would create a void as the agent's physical relation to the midden is gone in an instant moment (figure 19).

It is impossible to see an ancient person's daily or life-long course, but we do have another polyagent to focus our study. We could just as well attribute a nonhuman polyagent with an immobile

course used by mobile human beings (figure 21). Thus, we can study the midden as a course, a serial category or a "biography" to understand its whole "life" and not as part of the trajectory of one human agent. The presence of the midden would cause events to occur in its vicinity. Many different acts would have been initiated from this materiality and affected a multitude of other materialities. However, the result is that there is nothing that connects the different materialities if we remove the human agent, the social structure and the culture. There is no transcendent background to which we can attach materialities. This is not a problem for polyagentive archaeology, but it is for humanocentric archaeology.

To study the agent behind the artefact is looking back beyond the event horizon, a realization of a predetermined possibility (Bergson 1998). We always need to look "backwards" in archaeology, but I argue that we should locate materiality as a starting point and look toward the past future in an open manner, without assuming a straight connection with latter known forms and to fit them into a neat typology. By focusing on the "origin" of things, extending the looking even further back, we are narrowing down our perspectives. This is one of the reasons why we should change the causal relationships in archaeology, to set the materiality in focus and not the human ghost.

We therefore need to look at the metaphysics of time as it is used in both positivist and phenomenological perspectives. Metaphysics is the part of reality which cannot empirically be observed but which is presupposed in empirical studies (Ingthorsson 2002:20). Golden (2002:16) argues that it is not the goal of archaeology to understand temporality as it is understood by various philosophers. However, we need to understand our own presuppositions concerning time before we can make any changes. Only a metaphysical change from *being* to *becoming* can lead us forward from static representations.

3.3.2. A-series and B-series

Contrary to what most "postprocessual" archaeologists seem to believe, contemporary time philosophy mainly concerns "real" time rather than subjective time. Central in this discussion is John McTaggart Ellis McTaggart (1866-1925). According to him, we order events in time in two different ways, in terms of being past, present and future, and in terms of being earlier than and later than (McTaggart 1908).

The categorizing of events as being past, present or future is called the *A-series* (also known as *tensed* or dynamic time) (Ingthorsson 2002). In time, all events, like the construction of a causeway, move between these temporal modes; the construction will be in the future, then become present and then finally recede into the past (Gell 1992:157).

The *B-series* (also known as *tenseless* or static time), is when we categorize events as being before or after each other. Events do not change their B-series position, while they do change their A-series positions. In the B-series, events do not move from future to present, or from present to past. They are lined up in a predetermined unchanging sequence. The causeway constructed in A.D. 806, is always before the causeway constructed in A.D. 828. This means that in the B-series time does not flow or change. In other words, it is tenseless (Mellor 1998).

McTaggart (1908) argues that we need the A-series to explain change since the B-series cannot perform that role. The main objection to the A-series is that an event cannot have the properties of being past, present and future at the same time. An event can only have one of these attributes at a time in the B-view. However, this gives it a date and such are only to be found in the B-series since here events do not change as they do in the A-series. Then we need a B-series to establish the A-series which also is needed to create a B-series. This leads McTaggart to the conclusion that time is unreal (Gell 1992:151-153). If something that consists of many parts is to be real, all of its parts must coexist. All the parts of time must coexist in order for time to be real and because time is the sum of everything in the history of the universe, the reality of time requires everything to coexist (*temporal parity*). It means that the events we think are future or past, and thus non-existent, actually

do exist in a different temporal location than the one we are in. Different moments of time are in parity with each other in terms of existence. That is, it relates to the coexistence of all moments of time, meaning that 3114 B.C. is as equally existent as A.D. 2012. All moments of time exist and are real and the "now" is just a subjective illusion. Thus, the unreality of time is that time is not a substance or that substance cannot be temporal (Ingthorsson 2002:60, 68).

In short, McTaggart argues that change is essential to time. For this reason, he claims that reality is not temporal since the tensed account is contradictory, and the tenseless account of time is static. His answer to this is the C-series in which reality is not temporal or material but spiritual and timeless (ibid:24). The C-series consists of permanent relations of events that together with the A-series gives time. Since it is not temporal, it involves no change, only an order. When change enters the series, it transforms into a B-series. The C-series do form the order of a series but do, however, not determine the direction of it. For that it needs the A-series (McTaggart 1908).

McTaggart's conclusions are the foundations for the current debate in time philosophy. The debate usually concerns whether or not the tensed accounts are contradictory and if the tenseless accounts can describe change and causal production (Ingthorsson 2002:23).

I would say that most archaeologists follow the B-view of time, probably without being aware of this. The archaeological preoccupation of dating and fitting events and artefacts in a chronological table can only be related to the B-series. The B-view cannot account for change because it relies on the principle of temporal parity. As a contrast, the agency theories rely on an A-view of time. The main problem here is that agency theorists also use the chronological periods at the same time, as if there were two parallel times, one open ended and one determined.

Events are spatially and temporally extended and this makes them different from things since they only are extended in space, but not in time in the sense that they lack temporal parts. Some B-theorists do argue that things have temporal parts, this relies on the idea of temporal parity (Carter and Hestevold 1994). The tenseless account argues against the idea that things begin and cease to exist since things need to have temporal parts equally existing in different temporal locations (Ingthorsson 2002:21-22). It is here we run into problems concerning change, persistence and causation.

Persistence

There are two different views of persistence in philosophy. One is that things persist by being in the present from coming into existence to ceasing to exist. The whole thing is in the present and thus come to exist at different times. This is the *endurance* view of persistence and it fit a tensed (A) view of time (Ingthorsson 2002).

In tenseless (B) time entire things move from one temporal position to another. A thing at different times equally exist but there has been no passing between the two temporal positions (ibid:26). Lewis (1986) argues that things have temporal parts which are the state of things at certain times. This is the *perdurance* view of persistence (Ingthorsson 2002:27).

The way archaeologists use a chronological table is similar to that of the perdurance view of persistence. The table is believed to show a course of a "culture" within a spatio-temporal axis. Events, ceramic complexes and spheres are given dates and strung along a progressive time line. The archaeologist can pick out or place an artefact within this frame and believe it represents the event or culture that placed it where he or she find it. As such, the archaeologist must rely on the linked ideas of temporal parity and temporal parts. It represents a closed and a predetermined future in which cause and effect are fixed states.

Causation

The idea that cause precedes its effect is a problem when it comes to our archaeological record, since what we only have is the effect of past social actions or of past human agency, at least if we

maintain the usual humanocentric view. The archaeological objects are detached from their causes which are the human acts we wish to understand but which are not visible to us. I shall discuss cause and effect in relation to the single artefact and not in relation to complex world systems, since their causative capabilities also need to be reduced to single instants and such reductions make world systems highly problematic.

Mellor argues that causation distinguishes time from space and gives time a direction. A cause can have its effect in the very same place, but it can never be so in time. It must always be later, never simultaneous, and thus causation must preserve the identity of the object while the properties change. Therefore, time is the causal dimension of space-time (Mellor 1998:6).

Causes tend to be seen as explaining their effects but "effects neither explain nor provide means of bringing about their causes" (Mellor 1998:107). Mellor assumes that what makes us able to deduce information about the cause is not the particular effect that we perceive but the fact that we already know what kind of causes usually produce that kind of effects, i.e. we cannot know anything about a cause from an effect which we have never seen before. However, this holds for causes as well. We cannot tell beforehand what something new will produce (Ingthorsson, personal communication 2003).

Cause and effect are usually established as two different states and their internal duration are therefore emptied to two instants. However, in the cause-effect scenario, a cause must be so complete that it must take place by itself (Bachelard 2000b:67-68). The same must then be said about the effect. If so, can a cause really produce an effect if each takes place by itself? The coming into existence of effects is also the effect becoming present. But since some B-theorists argue that the later ("future") already exists (temporal parity), then the effects are not becoming existent by becoming present. Thus, the problem is that causation cannot produce the effect if the "future" exists. However, if effects are produced this means that the future does not exist (Ingthorsson 2002:12).

There is a link between endurance in tensed time and *causal production*. A common view is that an effect comes into existence when a substance changes under an external influence as is the case in hylomorphic views. The external influence is called agent, something with causal powers. It acts upon the patient and the effect can be found in the patient. This view has not made it possible to see the patient as part of the cause. It leads to the idea that the effect does not exist until the production is over and therefore does not partake in the production. However, causes are not only external to the changing thing. There is a reciprocal interaction between two things (ibid:32, 45, 98-101). Thus, human beings are not the sole causative agents behind the archaeological record, the materialities are not just passive patients or effects of human action.

There is also a link between perdurance in tenseless time and *causal correlation*. There are two views of causal correlation: (1) causes are merely correlated to their effects. (2) the Humean approach in which we cannot make objective claims about causality, we can only say how it appears to us, and therefore we have to correlate between events (ibid:14, 31). Hume argues that habit is the sole explanation of making causal inferences (Turner 1994:6-7). Combined with a tenseless view this would mean that the removal of a chert flake from a core with a hammer stone only is a correlated event. The hammer stone does not produce the flake. Due to perdurance, the state of being a whole core exists in one temporal position and the state of being a core and a flake in another temporal position.

Causal correlation means that cause and effect are separate instants, not part of a continuous duration. However, the instant is not a vehicle for causation; it cannot influence what is before or after (Webb 2000:195). Therefore, we can never completely understand a causal sequence since we have to divide it up into successive states. We are also eliminating the duration that link them, since there are lacunae in the sequence of causation (Bachelard 2000a:97). This is one problem with the idea of cause and effect. They tend to be reduced to instants and have a linear connection.

Even more problematic with the cause and effect view is that they rely on the ideas of *realization* and the *possible*. In the A-series and B-series, time has been reduced to the process of realization, that is; a cause realising a possible effect. The possible is a predefined form of the real and its transition to the real is therefore predictable. For Bergson, it is the possible that mimics the real since it has been created from the real as a sterile copy (Deleuze 1991a:98). In this view reality is nothing but the unfolding of a predefined possibility (Grosz 1999b:26). The realization of the possible, of the already given, deprives evolution of its inventiveness and creativity (Pearson 2000:147). Such mechanical explanations treat past and future as functions of the present that can be calculated. In this way, time is nothing (Pearson 1999:41).

In short, in A-series (popular in agency theories) and in B-series (popular in chronological tables), causes are always described retroactively from the supposed effect and in this way; the cause becomes a thing (quasi-object) in itself (Borradori 2000a). Thus, Bergson says that; "the present contains nothing more than the past, and what is found in the effect was already in the cause" (Bergson 1998:14). The idea of cause and effect changes succession into inherence instead of production. By doing this, active duration is ignored. When we set up causal relations as a necessary determination, we claim that things do not endure like human beings (Bergson 2001:209-210). However, materiality does endure. The problem in seeing this mainly comes from those approaches that see time as an infinite series of instants (both in the A-view and the B-view).

3.3.3. Instantaneous views of time and some of their critiques

In McTaggart's view, time can be divided into fragments or fragments can be added, and it can be represented as points or lines. This is a time filled with spatial characteristics. Our languages are full of this. We ask ourselves how *long* time events take and we represent time as either linear or cyclical (geometrical figures). This characterises the instantaneous view of spatialized time which is in contrast to Bergson's continuous duration. Should time be seen as a whole complete and continuous duration or as an infinite sequence of discontinuous, momentary and/or discrete instants? Our experience of the present is non-punctual and thus durational. However, Rubenstein (2001:162) wonders how there can be an experience of duration when parts of this duration no longer exist when we experience duration. One answer to this would be that time as a series of instants or as duration has no appearance outside the things or events that exist at these moments, that they are mere abstractions (Ingthorsson 2002:9).

However, some philosophers, such as Bergson, conclude that the scientific pictures of reality are just abstractions or idealizations (Rubenstein 2001:172). The instant is unreal according to Bergson, but how can we otherwise say that an act begins or ends if there are no instants? This must be something different than duration according to Bachelard (2000b:67). This latter approach that deals with causation has been the dominant view in philosophy and science. Edmund Husserl (1859-1938) and Gaston Bachelard (1884-1962) represent two versions of this view of "spatialized" time. Martin Heidegger (1889-1976) and Jacques Derrida (1930-2004) will represent the critics of "spatialized time".

Husserl

Husserl constructed his phenomenological theory from instantaneous states of consciousness (Rubenstein 2001:172). Later phenomenologists, such as Heidegger and Merleau-Ponty, have more in common with Bergson's view of time. For Husserl (1991), time is constituted of the advancement of the transcendental ego. He uses a concept of intentionality which is pre-objective, pre-reflexive, and pre-temporal. This absolute subject can relate to itself without being split into an object. The flow of consciousness therefore needs a presence that constitutes temporality without being in time itself (Hägglund 2002:159).

Husserl argues that the mind consists of a series of instantaneous modifications of perceptual

and memory images. He distinguishes between *retentions* of experience (primary memory that maintains what has just been experienced), the primary impression that registers it, and *protentions* that are directed towards what will come. These functions create a living presence, the basis for all experience (ibid:160). Retentions and protentions are the horizons of the extended present and not memories or anticipations of other "nows" (Gell 1992:223). However, these do not occur in a temporal process; only their contents do (Hägglund 2002).

A retention is a temporally removed experience that acts as the background of old beliefs to which newer beliefs are projected (Gell 1992:225). Perception becomes a retention of a retention of a retention and so on, until it is distant in time. The past does not slowly disappear as the present emerges. It changes and creates different protentions depending on how the present is emerging (Husserl 1991). What is past has to be present in one way or another for us to experience duration. When a now as a primal impression becomes a retention, it becomes a now, an actual existent. The retention is actual but the impression is not (Rubenstein 2001:162). The primary memory (retention) relates to an original perception and does not threaten the unity of the human subject, but the secondary memory (reproduction) does not relate to perception and splits the self-consciousness of the subject (Hägglund 2002:165; Sandbothe 2001:80).

Thus, the present in Husserl's philosophy is not a sharp "now" but is rather an extended time field where we update perceptions of the proximate past, and then the past of the proximate past and so on. The temporal experience emerges as an unbreakable unit through memories and expectations in the present. The temporal spread means that past and future are part of our experience (Rubenstein 2001:159).

However, Rubenstein argues that unifying the instantaneous representations is not enough for a durational experience. They are only a representation of an A-series. It will not be temporal unless we already have knowledge that it is a temporal series. As time is needed but cannot be derived from this series, then it must already be there as an *a priori* representation as Kant argues (ibid:165-167). Kant claims that we all have the same kind of "faculty of representation", that is, a capacity to order atemporal and non-spatial stimuli from the external world and create an experience that is temporal and spatial (Ingthorsson, personal communication 2003). As will be shown in the next chapter, this is what Bergson argued against.

Bachelard

A more extreme reliance on instantaneous states of consciousness is found in Bachelard's time philosophy which in many ways was constructed as a rejection of Bergson's philosophy, which will be discussed at greater length in chapter 3.4. Therefore, Bachelard's view is important as a contrast. Bachelard argues that the attempt to study Bergsonian duration needs to look at smaller and smaller fragments and therefore it will fail since time can only be observed in instants and duration can only be experienced through these instants. For Bachelard, the instants without duration forms duration in a way similar to a line that consists of points with no dimension (Bachelard 2000b:69, 77).

Bachelard suppresses the instant to a point in four dimensions. In physics, the instant is a geometrical ideal, simply because time is represented as a line consisting of infinitely small points. The instant is an absolute in Einstein's theory of relativity. It is a point in space-time, a synthesis of space and time (ibid:75). The instant is not an abstraction or an entity by its own, it is a relation (Webb 2000:194). As such it fits both the A- and B-series as it can be located along a linear time sequence which is the metaphor that concerns both views of time.

If the instants have no connection with each others, then they cannot create a flow and in such cases they must be lined up in a sequence just like the B-series and we have to rely on temporal parity. If instants have no temporal extension, then time cannot have an extension (Ingthorsson, personal communication 2003). Therefore, Bergson argues that the idea of instants belongs to quantitative science and that they are static and kill the flow of time (Barbour 2000:98-99). Bergson

believes that a discrete (isolated) instant cannot produce the next instant and continuity remains a problem.

Bachelard (2000a:44) tries to solve this by claiming that only nothingness is continuous, being, instants and events make time discontinuous. Time is empty if nothing happens and nothingness lacks magnitude and as such it is not measurable (Bachelard 2000b:80-81). He argues that if time is continuous then we see time as independent of the events that make us perceive time and he accused Bergson for seeing time as continuing between events, in the void (Webb 2000:191). For Bachelard, the instant is found between nothingness and nothingness. The being of time is not carried from one instant to the next to form duration according to Bachelard. The instant is solitary and isolated, breaking with the past (Bachelard 2000b:65).

Bachelard sees the "new" as something that exceeds earlier conditions. The instant does not have a history since it is new compared to the preceding instant (Webb 2000:195). The new cannot be new if it is totally connected with the past and therefore he rejects Bergson's continuity as this means that the present is inscribed in the past (Pearson 2000:145). However, the instant cannot be perpetually vanishing if it is not also perpetually returning (Loizou 2000:48). The idea that something will end is therefore the foundation for continuity for Bachelard (2000a:38). What lasts from the past is what has reasons to begin again. Only that which starts over again has duration. Therefore, Bachelard argues that rhythm, as a series of instants, is critical to the concept of time (ibid:20).

In contrast to Bergson, Bachelard argues that our memories of events are reduced to instants. We have only selected memories, not a continuous memory (ibid:52). It needs many other instants to form memory. Continuities have to be constructed as they never are complete, solid or constant (ibid:29). Bachelard's thought resembles Cartesian cogito in that it has no duration. It becomes fully conscious of itself at an instant moment since it is empty and solitary. After this it confronts the world in an empty duration. Thus, the present is the only complete and evident and it is the foundation of our personality (Bachelard 2000b:69, 78). Both memory and anticipation comes from our habits and past and future are habits themselves. Past and future that give an idea of duration do not exist. For Bachelard, past and future are empty and do not affect time and being since they are continuous nothingness. Time is only the present instant. The present never passes since we constantly move into a new instantaneous present (ibid:87-89).

Thus, Bachelard maintains an idea of both momentary and discrete instants. The first term means that the instant has no extension and the second means that the instant is isolated from another instant. In such a view, time could be seen as having neither extension nor flow. Bachelard's instants are static and there is no flow between them. This makes them fit the B-series in real time. One problem with this view of time is that it is made up of an infinite succession of discrete instants. The temporal modes have no temporal span in such a view. The past is no longer real, the future has not yet emerged, and the present is constantly fading away. Such ideas go along with an idea that the ego is static and non-transcendental (Baert 1992:83).

Heidegger – a critique of instantaneous time

Like Nietzsche and Bergson before him, Heidegger rejects the idea of time being dividable as they are in Husserl's and Bachelard's views. However, Heidegger maintains a subjective view of time. He focuses on the future, a dimension important for practical self-projection (Sandbothe 2001:73). Temporality is something *Dasein* (a form of existence that self-conscious human beings uniquely possess) does, rather than being something external or a thing (Thomas 1996:43). Time for Heidegger is a structure of occurrence, a human dimension that unfolds in action. It passes through humans and not vice versa. Time does not exist outside our existence, we are time itself. We have to see how people interact with the world to understand what time is (Gosden 1994:1). This existential time is the foundation for the public time of the world. We date events but that is

dependent on the fixing of the event in a "now" or "then". Public time is therefore not connected to existential time (Thomas 1996:44).

Time for Heidegger is not a series of "nows" that succeed each other for all eternity. Thus, time is not the measurable "spatialized" time but the time of selfhood which is finite as it ends with death. For Heidegger the future is most important for the subject and therefore shapes the present and the past. We live for the future, and being is directed towards death, since life can only be valued against the death (Heidegger 1962). Time also lacks sequence as the past is merged with the present and the future is a repetition of the past (Gell 1992:264). Therefore, Heidegger believes that the division of time into past, present, and future is too simplified. These time-horizons should be "the character of having been", the present and "the future as approaching". These are interwoven and cannot be isolated as past, present, and future can. They form an ecstatic unity (Baert 1992:16; Karlsson 2001:53; Rubenstein 2001:160).

Derrida's deconstruction of time

A major assumption in the above mentioned theories is the human subject as a positive pole in a binary opposition that structures Western thought. Derrida shows how this self-present meaning is maintained in Western metaphysics by ignoring that meaning is created through *difference* and not through *presence* (Cornell 2000:177).

Derrida points out that there are several problems to be solved for a presentist/ instantaneous approach to time and to the world. For example, St. Augustine sought the eternal now which never changes or perishes, an instant moment never to be broken. Thus, he argued that the true Being is beyond time and space, and that what truly is has to be identical with itself, an unbreakable unit. This means that only the present can exist, since the future, and the past are splitting the unit. Derrida points out that this definition excludes temporality itself. What happens in time can never be an unbreakable unit; it is always split in before and after. For there to be an experience of time, these phases need to be related (Hägglund 2002:141).

Another of Derrida's examples is Husserl. As mentioned, Husserl introduced the concept of pre-reflexive subjectivity to save the idea of an absolute presence. However, the succession of instantaneous

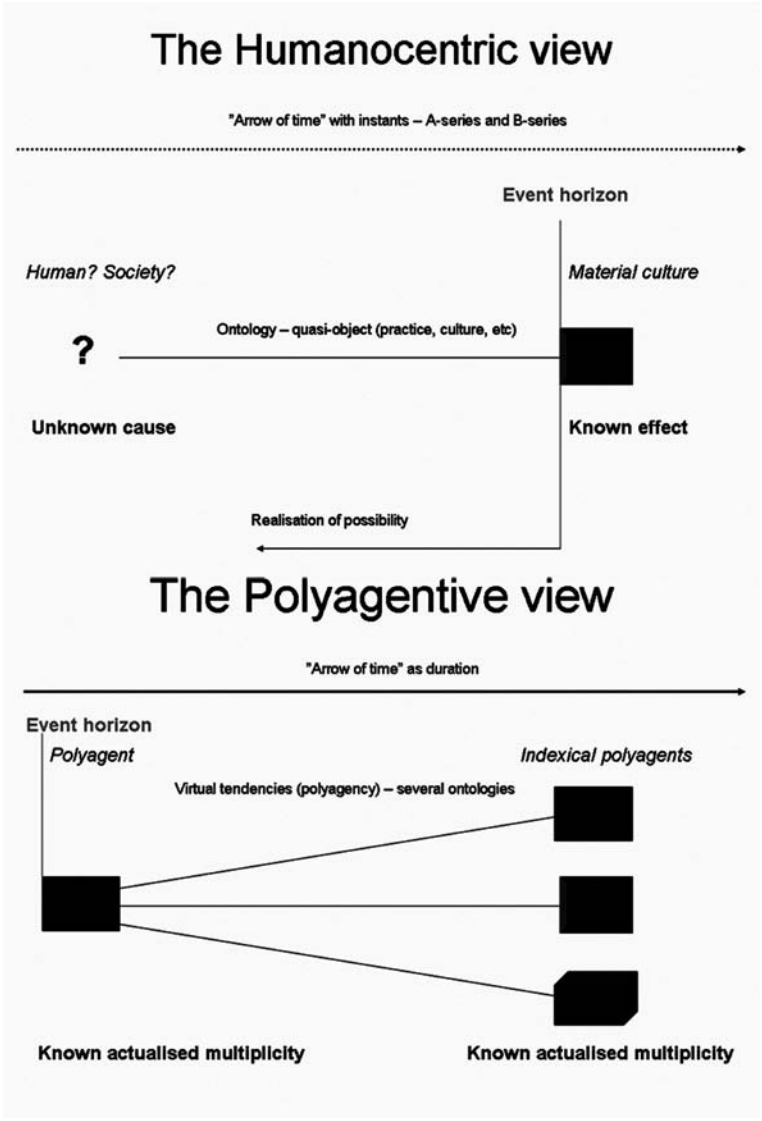


Figure 22. The difference between time in humanocentric and polyagentive archaeology.

states must be synthesized by another act, and so on. No act can be constituted in itself. This infinite regress is not a constitutive condition for Husserl. He tries to find the absolute flow, a third level in his time consciousness. This is a living presence, an absolute subjectivity. But the problem still remains, the subject can never exist within an autonomous presentation, it is constituted by relating itself to another. Self reflexivity is only possible if temporality splits it in two moments and creates a difference (ibid:157-165).

Derrida's deconstruction of Husserl's and St. Augustine's ideas of time emphasizes that what makes something exist cannot be identical with itself, such as an instant. Temporality makes it impossible for anything to exist as an absolute identity. The *metaphysics of presence* means that a spatio-temporal existence is contrasted against an absolute Being beyond time. It is the static surface upon which changes are projected. Derrida argues that what metaphysics try to discard as being secondary in reality is primary. This inversion is complemented by adding the negative term in the binary system that is being questioned. The synthesis is not an unbreakable unit; it is dependent on a temporal displacement. The synthesising process develops in time, which in its turn has to be synthesized by another act. This is a process with no beginning (ibid:143, 152, 186).

It is my belief that Bergson's idea of virtuality already has gone beyond the metaphysics of presence. Before we head towards Bergson let me sum up the shortcomings of the spatialized view of time that dominates both positivist and post-positivist archaeology.

3.3.4. Summing up the shortcomings of spatialized time

The character of spatialized time in humanocentric archaeology can be pinpointed down to the following:

- Archaeologists try to find an unknown cause (human or social structure) of the known effect (materiality) they find. When they cross the imagined event horizon in search for the past practices or meanings, they find an empty time, the void of the past. Finding the causes is a way to fill the "void" of the past with meaning.
- This leads to a construction of a sequence to realize the predetermined possibilities, which ultimately leads to a closed past future. At any "past present," the future was already predetermined and the future could only take one course, the one that ultimately led to the context in which the materiality was found.
- The sequence is then believed to be continuous and linear.
- Due to the problems of reaching fine scaled chronologies, instants that are separated by true duration are compressed to simultaneities by flattening time into one instant. Thus, artefacts manufactured at different dates are analyzed from a supposedly simultaneous instant (a "past present").
- Creating an all-embracing model seems to be important since the voids between the temporal reference points the artefacts are believed to represent, are filled with quasi-objects, generating an archaeology of false fullness. However, the past is not better understood by filling it with contemporary quasi-objects.
- Changes in time are either seen from a linear, reductionist and simplistic evolutionary perspective or from a fairly static social essentialist perspective.

For polyagentive archaeology this leads to problems since causes are not empirically seen, "possibilities" not of interest to humanocentric archaeology are neglected and the "past now" is determined from its outcome in a "past future". From a humanocentric perspective, there are ruptures in the archaeological record which should form a critical part of our understanding of the archaeological record, but these are neglected as archaeologists believe ruptures are against continuity and that continuity is preferable. The past is then filled with continuous quasi-objects.

The humanocentric view is a closed world and is believed to have existed prior to its realization. That is, the past human agent had to put the artefact where the archaeologist finds it. If a predetermined possible is realized, it only adds existence to it. Bergson argues that such ideas suppose that there is a transcendent realm of pre-existing possibles (Pearson 2000:152). In archaeology the past is seen as determined and final. Our habit of reconstructing events backwards and lining up events with dates, like the B-series, implies that the past future existed in the past present and thus, the past future was closed. Retrospection is important for us since we project present realities backwards as possibilities. We tend to believe that what exist now must always have existed (ibid:165).

To see the artefacts as persistent effects after the event horizon reduces our interpretations to predetermined possibles. We are shutting down potentials in the archaeological data and thus neglect other tendencies the objects have initiated. If we move the imaginary event horizon to before the "cause" rather than just before the "effect" and see the artefacts as tendencies of action rather than as the "effect" of action, we have a more diverging and open past future where action took different forms which can be analyzed from different ontological perspectives (figure 22). We have in the object the tendencies of its own becoming. Thus, becoming is not only something external to the artefact. Further, the human agent is like a *catalyst* that changes the spatial location and physical appearance of the object. The catalyst can accelerate or decelerate a process but is not part of the process. A catalyst intervenes, finds targets and triggers tendencies and creates encounters that would never have occurred without them. It is not consumed or substantially changed and can therefore trigger tendencies at other places (DeLanda 1999:37).

If we see materialities as the tendencies that affect human agents in certain ways we may overcome the instant moment when a "cause" causes something. Can we explain how materiality comes into existence once the imaginary event horizon has been pushed beyond the materiality? It may be possible if we attribute materiality with polyagency and virtuality.

3.4. The virtual and the actual – Bergsonian and Deleuzian ontologies

Can we find anything that exists on both sides of the imaginary and humanocentric event horizon, or rather, what exists without an event horizon? Are there other approaches to time that are not based in the instantaneous and spatialized views of time and events? Certainly, there are several, see for example Nietzsche, Heidegger, Foucault and Derrida. However, I intend here to follow the view developed by Bergson and followed up by Deleuze, Grosz, DeLanda, Borradori, Pearson and Badiou. In the writings of Bergson's followers there are also a considerable amount of Nietzschean thoughts. If we start to penetrate Bergsonian metaphysics, we will also reveal a different ontology than the one found in McTaggart and substance oriented sciences that focus on the metaphysics of Being. For Bergson, *Being is Becoming*.

The Bergsonian and Deleuzian ontologies will set us closer to understanding how the changing world forms systems or entities that archaeologists usually ascribe ontological security and transcendence. What will be learned in the following chapters is that the virtual is immanent in matter and that the social world can be reached from there, rather than from transcendent quasi-objects.

I will focus on Bergson and bring in Deleuzian ideas whenever he has made a considerable change. Keep in mind the basic outline of Deleuze's ontology in chapter 3.2.5.

3.4.1. A different view of differences

To best understand Bergson's breaking up of the predominant metaphysics of Being and presence, we need to see how he deals with space and time. In his doctoral thesis, *Time and Free Will* (Bergson 2001[1889]), he criticizes science and philosophy, Kant and Hegel in particular, for mixing time

and space. The mixing of time and space has to do with the incapability of the human mind to think in terms of processes and change. Our mind is only capable to think in terms of solids, static entities and space, and this affects our understanding of the past. We cannot understand that which is changing in duration (Bergson 1998).

The difference between duration and space

Bergson believes that the linear succession of stages and instants, such as future, present and past as used by McTaggart, Husserl, Bachelard and natural science, is an illusion. He suggests that our lives and social formations are regulated by this (Pearson 2000:156). For him, real time is duration and it can only be understood from intuition. He sees the instant as an unreal abstraction imposed from the outside by the human mind (Bachelard 2000b:71). Bergson calls scientific time cinematographic, as it is similar to the movement of static frames of instants. As he sees real time as continuous and unbreakable, it escapes the intellect which can only form a clear idea from discontinuity (Chimisso 2000:1-3). The snapshot model is therefore not adequate for him to understand continual change (Webb 2000:191).

In Bergsonism there are two different kinds of reality: one is *heterogeneous* (duration) and the other is *homogeneous* (space). In line with Bergson, Borradori suggests that we should separate time and space since time has a direction, and space does not. Time flows and space does not flow. There is free movement in space, but not in time. An entity is always complete at a point in time, but is not necessarily so in space (Borradori 2000a). Deleuze further describes the difference between time and space like this: space is a multiplicity of exteriority without succession. It is simultaneity, juxtaposition of order, quantitative differentiation, difference of degree, a numerical multiplicity, discontinuous and actual. Duration is internal multiplicity of succession, fusion, organization, heterogeneity, qualitative, difference in kind, continuous, non-numerical and virtual (Deleuze 1991a:37-38). These differences shall be outlined and explained in the following pages.

Space makes it possible to do distinctions, to abstract, to count and to speak. Every homogeneous medium is space. Homogeneity lacks quality since different forms of things that are homogeneous cannot be distinguished from each other. What Bergson points out is that time is often seen as homogeneous and it is therefore believed to co-exist with space (Bergson 2001:97). Time is spatialized in science. Any theory that explains events, states, systems, words, numbers or practices as clear cut from, or external to, later events, states, systems, words, numbers or practices see them as spread out in a homogeneous time. The scientific systems and models in Mayanist archaeology, outlined in Section 2, are always in an instantaneous present and have no connection to real duration (Bergson 1998:22). Contrary to Husserl, Bergson sees the immediate data of consciousness as pure duration. In duration there cannot be any juxtaposed events, states, systems, words, numbers or practices and there is therefore no causation since this concept relies on instantaneous states.

In short: Bergson sees states of consciousness, events, systems and action as virtual multiplicities, and it is not possible to see them in isolation (Bergson 2001:73). I shall describe this in the following chapter.

Differences of degree and differences in kind

Difference has been conceptualized in two ways. One way is that of comparison, in which external differences exist between complete entities that are represented by a third term that determines the difference in degrees of more or less (dialectics). The other is a constitutive difference, an internal relation that structures its negative relation to other terms. Both these conceptions see difference between two things (Grosz 2005:5).

For Bergson and Deleuze, difference is not tied to units, entities or terms. The dualistic structure from which difference generally is represented actually comes from a continuum of

a unity. Dualisms do not come from two terms but from two tendencies. Only one of them is the basis for the other. It is differentiating and creates one or several terms that order the basis. Bergson calls this basis duration and Deleuze calls it the strata or planes that are formed by thought and action (ibid:6).

One of Bergson's most important claims is that our way of knowing is based in needs and habits which are obstacles in gaining knowledge of the absolute. In his earlier writings, this obstacle is dialectic reasoning, but as Bergson develops his ideas, it is intelligence itself that becomes the obstacle. But let me begin with Hegelian dialectics. It sets up contradictions on a scale with degrees; order in one end and disorder at the other end. Degrees are believed to be homogeneous (spatial) units of measurement. The dialectics therefore confuses *difference in kind* with *difference of degree* (Bergson 1998).

What Bergson aims at is to grasp the *thing* itself and establish a notion of internal difference. This is far from the Hegelian idea of difference in which a thing is different from itself only because it also differs from what it is not. In dialectics, difference is constituted by contradiction and negation (Pearson 1999:21). To think that something is non-existent, as Bachelard does when he claims that only nothingness is continuous, means that we first think of this nothingness and thus think it is existent. Then we think of it in a way that is incompatible with the other that supplants it. Thus, contrary to what we might think, we actually add when we think of something as non-existent (Bergson 1998:285). For Bergson, disorder is nothing more than another form of order. The idea of disorder comes from disappointment of our expectations. Disorder is only the presence of an order that does not interest us (ibid).

Another dialectic relationship is the idea of the full and the void which occupied Bachelard and to which we all succumb. Bergson argues that we go from the static to understand the moving and we use the void to think the full. This has to do with our memory. A being with no memory would never be able to use the words void or nought. It would only perceive what is present, not what is absent (ibid:274, 281).

Dialectics proceeds by negation which tends to be represented as symmetrical with affirmation. However, while affirmation relates directly to the object, negation has only an indirect relation with the object (ibid:287). The difference in dialectics becomes a contradiction since properties and entities are individuated by contrast and not for what they are. Dialectics therefore gives us external descriptions. This is the result of interpreting difference from negation (Borradori 1999b, 2000a)

As a contrast to a dialectic difference of degree, an internal difference in kind is not a difference between two objects that are seen as self-contained substances. Rather than describing a thing, such as a causeway, as a composite of properties, Deleuze argues that we should focus on the emerging properties; the tendency is what differs in kind. The thing or matter, the causeway, only differs in degree. That is why it is juxtaposed and compared with other causeways, even if they are separated by space and spatialized time. However, degrees just give us fragments of the whole (ibid).

Bergson's distinction between differences (in kind and of degree) is for Deleuze a *monism*. By this is meant that all the differences are part of a single nature that is expressed as both differences in kinds and of degrees (Pearson 1999:143). All the degrees coexist virtually and the unification is also virtual (Deleuze 1991a:93).

3.4.2. Multiplicities

Central in Bergson's philosophy is a distinction between two versions of multiplicities. To understand the differences between the two forms I shall begin with the *actual multiplicities*, which are differences of degree.

Actual multiplicities

Every number, such as number 3, is a unit since it is given a name (3), but it also consists of a sum (1+1+1), a multiplicity of parts (several of the number 1) that each can be seen separately. These units are identical when they are counted. The causeways at Ichmul and Yo'okop can be counted as a group if we neglect their differences, and only take what they have in common, which is a numerical designation. The idea of the number is a multiplicity of parts which are completely alike. However, the parts must still be distinct from each other, as they otherwise would be a single unit. We therefore set the causeways in juxtaposition in a homogenous space when we count them. They can be enumerated because each causeway is separated from the others, they have spatial locations. Thus, actual multiplicities are homogeneous and spatial. Since they are homogeneous, they can also be represented with a sign, such as numbers (3) or words (three) (Bergson 2001:75-77). Science handles signs that are substitutes for, and representations of, the objects (Bergson 1998:329). This is the way in which materialities have been dealt with in archaeology, such as maps of causeways substituting the real objects.

We fix a point in space whenever we count and it is because of this that abstract units form a sum. When we think of the units separately (one single causeway), they are seen as indivisible. However, when the causeway is set a side when we count, to be able to pass to the next number, it is objectified, and it becomes a multiplicity (causeways). Since it is possible to divide a unit into many parts, we see it as extended. Thus, the formation of a number or a word implies discontinuity. This is what McTaggart, Husserl and Bachelard do when they describe time. Time is made into space and time is believed to consist of instants that can be added, divided, extended and isolated since an instant is discontinuous. An instant is separated from the following instant by space. We add these instants into a false continuity. In reality, successive states are combined with or interpenetrate with other states but when we count the states, they must be separated within a homogeneous medium where they leave the same traces. This medium is not time, it is space since while we count the instants, the intervals remain and instants disappear (Bergson 2001:79-87). Spatialized time is therefore "a sign, a symbol, absolutely distinct from true duration" (ibid:90).

Pure duration cannot be measured so what science and humanocentric archaeology measure are simultaneities. A ***simultaneity*** is the intersection of duration and space. When we measure motion between one point and another point, this is just a mental synthesis. We only get the body's position at particular times (ibid:108-115). Thus, we do not describe change by comparing a compressed instant from A.D. 562 (Caracol's/Calakmul's victory over Tikal) with another compressed instant from A.D. 679 (Dos Pilas'/Calakmul's victory over Tikal). We only have two simultaneities separated by spatialized time, not by true duration. Change has only occurred in duration, not in the assumed void between the two simultaneities.

Duration in the scientific view is seen as an extensity and as succession. It is analogous to a linear chain. However, to be able to identify a line as a line, one must take a position outside it (ibid:101-103). Therefore, the linear description of time represents the world placed in time, and not constituted by time and changing with it (Borradori 1999a). See any chronological table for archaeological examples. In these tables, lines divide and add periods and the world is fitted into the time periods. The lines between periods act as instantaneous and simultaneous breaks, very much like the event horizon. Since we wish to understand past human action as active, what is the flowing time, the pure and true duration that is not dependent on simultaneities?

Virtual multiplicities – pure duration

The number or any other actual multiplicity is what always divides in degrees but does not change in kind. A causeway can be separated into smaller segments, but it would still be considered a causeway. Contrary to this, the durational or ***virtual multiplicity*** always changes in kind when it divides and is therefore non-numerical. This multiplicity is a becoming that has no centre of unification as

it is not spatial (Pearson 1999:155-157).

A virtual multiplicity is heterogeneous (singularized), continuous (interpenetrating) and progressive (temporal). Since it is heterogeneous and interpenetrating it cannot be represented by a homogenous and isolated symbol, such as a number or a word. Duration is inexpressible since it is a temporal progress. It cannot be quantified or divided into periods or seen as an infinite number of instants (Borradori 2000a).

Pure duration is when the present state is not separated from earlier states by an imaginary instant such as an event horizon. The former states are not set alongside the actual state but past and present is seen as a whole. Succession is melted into one another and forming a whole (Bergson 2001:100, 128). There is no essential difference in going from one state to another than it is to persist in the same state. It is more like a prolonged state. It is only our intellect that separates and generates objects artificially, and reunites them by another artificial bond (Bergson 1998:3).

Bergson argues that the past is preserved by itself and it follows us at every present. The past is growing without ceasing. The past has the capability to re-invent and duration is the continuation of that which does not exist into what does exist (Pearson 1999:34). Our present state is only explained by what happened before. For a conscious being, existence is also change. This, Bergson argues, is different from how we think of substances or material objects which we isolate from duration (Bergson 1998:5-7). In duration, nothing is a presence or a substance. Duration is not a collection of juxtaposed actualizations (instants) as Bachelard suggests. It is real but not a fully actualized presence. It is only virtually present (Borradori 2000a). The past is the *virtuality* of the present and the future is what restructures the virtual (Grosz 2001:xv).

The past cannot be constituted unless it coexists with the present. Therefore, they are not two successive moments. They coexist since every present returns to itself as the past. Since it preserves itself, it is also the whole past that co-exists at each present. When we think that the past is no more, we have confused Being with being-present. The present is pure becoming and it is always outside itself, it cannot remain the same since it otherwise would be tenseless. However, the past is not acting, but it has not ceased to exist. Therefore, Bergsonian duration is a real succession, a virtual coexistence and repetition (Deleuze 1991a:54-60).

Bergson speaks of several rhythms of durations, but each duration is an absolute. Our psychological duration is just one of several others. It is only by acknowledging the existences of several durations that we can say that two fluxes are simultaneous (ibid:76, 80). However, Bergson argues in *Duration and Simultaneity* (1965 [1922]) that there is a single time that is universal and impersonal. This, Deleuze argues, has to with Bergson's confrontation with Einstein's theory of relativity. Deleuze suggests that there is only one time (monism) but there are an infinite number of fluxes that are part of the same virtual multiplicity which is the single time (Deleuze 1991a:78-83). All the fluxes coexist in a monism of time in which they are expressed as either difference in kind or of degree. Thus, the whole is within a pure virtuality, not in the actual states. The virtual persists in its actualization into causeways and other objects (Pearson 1999:67).

Rather than trying to create a principle from which everything else comes, Deleuze tries to describe how the things are distributed across a single and undivided becoming. In his later works, he turns away from Bergson's qualitative duration and he focuses on the graduated scale, the flat *plane of immanence* (which explains the transversal movement of forces). This is "characterized by 'phenomena of delay and plateau, shocks of difference, distances, a whole play of conjunctions and disjunctions'" (Pearson 1999:75). The plane of immanence is the "facet of movement" between different systems which also crosses all systems and therefore constrains them from being absolutely closed (ibid:8, 143). Deleuze aimed for an empiricism where reality is constituted and affected by a plane of immanence that is always growing. The plane can consist of two or several series (objects, bodies, structure). However, I prefer to stay within Bergsonian duration and will only briefly touch upon Deleuze's plane of immanence in this Section. This plane is more relevant

when I discuss the polyagentive phylum.

Actualization - becoming

Duration both makes and undoes. It can bring out the virtual in the present and that which is different from the actual. This becoming and unbecoming drives the *actualization* of the virtual and makes both the past and the present virtual and ever changing (Grosz 2005:4). In the present, the virtual is actualized and becomes spatial. The virtual is erased in its actualizations and the actual creates its own virtualities (Grosz 2001:129). It is important to note that what virtually coexisted does not coexist in the actual. These actualizations can never be summed up into what virtually coexisted (Deleuze 1991a:101). In short, the actual states of a causeway in A.D. 850 and in A.D. 2006 cannot be summed up as the virtuality of the causeway.

Although Bergson's interest was the organic actualizations, the process of becoming takes place everywhere (Grosz 2001:80). Causeways can be seen as always changing in their exact contours. Their contemporary pattern we see only reflects a fluctuation that for the moment is in check in its present actualization (Pickering 2003:110). The present causeways are actualized from the virtual, but they are different actualizations than what they were during the Terminal Classic. The only connection between the past causeway and the present causeway lies in the virtual, not in its current materialities.

Many actualizations are only weakly coupled. However, different tendencies of becoming can occasionally be tightly coupled such as in the symbiosis between bees and orchids. These can be seen as an entity (ibid:98), or an assemblage. In a similar way we can study architecture and humans as an entity. We shall return to the process of actualization when I discuss polyagentive assemblages.

One consequence of making a distinction between the virtual and the actual is that causation ceases to be. When something is described as the result of a cause or as a property, it is separated from its own becoming, since the cause and result are seen as separated instants. The event freezes and obtains a self-contained presence and we think of it as if it was placed in space (Bergson 1998). Thus, causal links rely on spatialized time as we could see with Bachelard (2002a).

As a contrast to causation, the transition from the virtual to the actual is a surprise since the virtual has the potential to emerge something that is different from the actual (Grosz 2001:12). The virtual and the actual are not oppositional pairs which cause and effect, and the possible and the real are. The possibility is larger than the real, but virtuality is coextensive with the actual. Something that is new is the actualization of the virtual presence (Borradori 2000b; Grosz 1999b:26).

3.4.3. Tendencies, élan vital, the will to power and the eternal return

Darwin believed that one cannot predict evolution, so causes are not important to him. He rather sought *tendencies* instead of universal laws. Therefore, he was never interested in explaining the origin of life. Species do not have an origin since there is no unity; there are only variations of differences that were there from the very start (Grosz 2004:21-25). This is an idea similar to that of Bergson.

Tendencies are crucial parts of the world. Therefore, the Bergsonian tendencies are ontologically constitutive (Borradori 1999b). The difference in kind occurs between tendencies and these are pure (Deleuze 1991a:22). The world is a constantly transforming whole, it is always becoming. The tendencies and capacities are modal terms and not possibilities that will or will not become real. They are already real but have not yet become actualized (Borradori 1999b; DeLanda 2000a).

Bergson does not locate the driving force of evolution or change in something specific or self-contained, such as in the germ-plasm or in the DNA. This would reduce the innovative character of evolution (Pearson 1999:40). Bergson argues that there must be an original common

impulse or tendency that explains the tendencies within all living beings. This is the vital impetus or *élan vital*. Élan vital has been criticized for not being able to explain evolution. Deleuze reuses the term and sees no distinction between the organic and the inorganic. He sees the élan vital as dividing into two tendencies; matter (relaxation and expansion) and duration (tension and contraction) (Deleuze 1991a:22, 95). The élan vital explains the diversity of life, a "principle" of divergence and differentiation (Barbour 2000:99). This is a virtuality that is actualized and differentiates. The original virtual totality is differentiated but still has a unity and totality in every diverging line. Each dividing line carries the whole (Bergson 1998:53; Deleuze 1991a:94). Élan vital is Bergson's term for increasing elaboration, differentiation, and specialization. It is similar to Nietzsche's *will to power* (Grosz 2004:201).

The will to power is the struggle to overcome ones capabilities. This will wishes to produce and to make more (ibid:105). The will to power is a sub- or non-human tendency that governs all matter. It cannot be attributed to any entity, just like Bergson's élan vital. It is a non-physical impetus to expand power. It is multiple since there is no singular force. There is a field of struggle between differential forces. This will is not unified or global, but for Nietzsche it is the single principle that directs everything (ibid:125-127). It is active and commands and the will that obeys is reactive. Science itself has a will to power, since it requires becoming to freeze into being, to a predictable structure (ibid:111). In short; archaeology as a discipline freezes the past into static entities (actualizations) and predictions.

Deleuze sees in Nietzsche's idea of the *eternal return*, Bergson's duration (Borradori 2000a). The eternal return is also Nietzsche's answer to Darwin's natural selection. By this is meant that all forces will return or repeat. For Nietzsche, there is no origin or goal for becoming. Like Bergson, he does not privilege life with a particular part (gene, individual or species) that is part of the process, but he privileges the process itself, a push to the future, an eternal becoming (Grosz 2004:107, 129-136). The eternal return takes everything to the highest level of intensity (Pearson 1999:18). It is a hierarchical emergence in which the inner dynamics lies in the will to power. Each level of the hierarchy needs to embrace and exceed the qualities below it and it becomes a new and more complex order (Grosz 2004:137).

Nietzsche claims that time is infinite but it has a finite series of things, states, events, matter and energy. This creates a multitude, but a finite multitude, of combinations that return. This eternal return creates differences and the eternity for Nietzsche is therefore not something unchanging; it is a never ending difference (ibid:139-143). The eternal return is not a repetition of things, acts, and identities. Thus, it is not the identical that returns. It is their becoming that returns (Deleuze 1994:243; Grosz 2004:141-143). Thus, there are similarities between Nietzsche's and Bergson's views of becoming, although Bergson never states that he is influenced by Nietzsche.

Life and matter are two tendencies that constantly intertwine and set limits or potentials to each other. They are never found in pure forms. These tendencies are also of most importance to archaeology since they concern the relation between the human agent and materiality.

Life

A tendency would achieve everything it aims for if it was not opposed by other tendencies. Therefore, life is always a struggle between different tendencies, by other wills to power. Life is a movement and matter is the inverse movement. For Bergson, life is resisting the descending tendencies of matter. These movements form a world of undivided flux (Deleuze 1991a:104). However, as shall be argued with the Deleuzians, there is movement and individuation in matter as well.

Bergson suggests that it is the same vital impetus that forms the nerve system among animals which is found in the clorophyllian function among plants (Bergson 1998:114). These two tendencies were once fused into one. When one tendency grows it will be impossible to unite it with the other tendency which it once was. The tendency of life that unites animals and plants is to

accumulate energy and let it loose (ibid:253). The animal has developed towards a freer expenditure of discontinuous energy and the plant has accumulated energy without moving (ibid:116).

Therefore, Bergson sees living organisms as vehicles by which the élan vital discharges energy, invents and creates (Pearson 1999:64). Bergson attributes life with a "principle" of indetermination that has a capacity for novel adaptation. It does not create energy but utilizes what already exists (ibid:48). Life follows the vital impetus through more powerful explosives that can store solar energy. The organism keeps the dissipation of energy locked up and therefore the organism negatively limits life. Life is seen as a movement that is distancing itself from itself in the actualized material forms that it creates by differentiation. In this process, life loses its contact with the rest of life. The living organism closes itself. A species is therefore seen as a freezing of movement (Deleuze 1991a:104).

Thus, life prolongs a stimulus through a reaction; it stores energy rather than expending it. The more advanced the form of life is, the less automatic the relation between stimulus and response is. The response of it is also more unpredictable as there is a growing gap between stimulus and response, which creates greater freedom and consciousness (Grosz 2004:166). Nietzsche also emphasizes the active force of life in controlling matter. Life uses matter for its own future purpose and as such it both overcomes and succumbs to matter. Life is therefore not a growing utility or adaptation, it is a will to greater power, and to overcome the multiplicity of wills or tendencies, particularly that of matter (ibid:107-109).

Matter

According to Deleuze, Bergson sees matter as duration that has slackened and which places its moments beside each other. These moments lose in penetration and tension, but gain in spreading and extension (Deleuze 1991a:86-87). Matter has a tendency to constitute isolable systems that can be described with geometry. However, since it is only a tendency, this isolation can never be complete (Bergson 1998:10). To Bergson, matter is neither substance nor extension; it is an *aggregate of images* which cannot be reduced to the perception of a subject as it is in idealism. The image is more than the idealist representation and less than the realist's "thing" (Grosz 2004:164). I shall return to Bergson's idea of image when I discuss perception.

In Grosz's reading of Bergson, she goes beyond his organic-centred view. For her, all matter is more than itself as it has the potential to become something else. The becomings of life are dependent on the unbecoming, transformation, and utilization of matter which therefore give matter new virtualities. An actualization needs to be undone in order for the virtualities to change it. This is a co-evolution, a symbiosis between the organic and the non-organic. When life becomes, matter unbecomes, but matter is not transformed into being, it is just directed into another course of becoming (Grosz 2005:10-11). The actualization that is a causeway at a certain point in spatialized time needs to be undone when it is used, destroyed and reused for the virtualities in the causeway to actualize into other constellations. Human beings constructing the causeway give the limestone another virtuality which in its turn creates new tendencies and virtualities for human beings and other polyagents. The causeway is configured matter. It generates invention and makes it possible for us to act. The causeway provokes us to act and it is also the result of our action. Thus, matter and materiality is a precondition to life and to our needs (Grosz 2001:169).

3.4.4. Bergson's creative evolution

Earlier in this thesis I proposed not to follow Giddens suggestion of abandoning evolution in social sciences. This is primarily because Darwin has unjustifiably been accused of many things that his followers in social sciences have either misinterpreted or changed (Grosz 2004).

Although Darwin usually is the main figure associated with evolutionary thinking, he himself talked about descent with modification and only used the word evolution once in *The*

Origin of Species (ibid:69). He was more interested in natural selection, that adapt the well fit and generates greater variation from which selection works. Natural selection works on its "effects" and individual variation must therefore be manifested phenotypically. Thus, there is a time lag between variation and selection (ibid:47-50). Therefore, Darwin's idea of natural selection works on the *phenotype*, not on the individual genes as is the common approach today. The phenotype is made up of combinations of genes. However, an individual gene does not have a fixed selective value since it is dependent on its interaction with other genes (ibid:48). Such constraints in finding single units of reproduction are what both Bergson and Nietzsche strive to remove.

Neo-Darwinism

It is the neo-Darwinian view of evolution that currently dominates in evolutionary archaeology (O'Brien and Lyman 2000; Shennan 2002). Darwinism and neo-Darwinism emerged within particular "discursive" settings that have affected what these researchers look for and the way they look for it. Nietzsche sees a link between liberalism, economism and Darwin's followers. He believes that Darwinism reflects particular English ideas of equalization, a downward descent which reduces the human being to something common. This egalitarianism reduces everything to the average. Thus, Darwinism is a triumph of the weak over the strong. Nietzsche claims that Darwinism is a struggle of the unfit. These Nietzschean ideas have been problematic since they were taken up and transformed by Nazism. However, for Nietzsche, evolution is a future that constantly changes the present and directs the present beyond itself. Thus, evolution in Nietzsche's conceptualization is not the reconstructed past that explains the present, but a way to form unknowable futures (Grosz 2004:100-108).

Much of what Bergson faces in his *Creative Evolution* (1998 [1907]) is the work of the neo-Darwinist biologist Weismann who laid the foundation to modern genetics. Weismann argues that life can replicate and reproduce itself because of a hereditary substance, the germ plasm (what we today call DNA). This controls and programs in advance and is not dependent on external factors as had been argued by Darwin and Lamarck. Weismann argues that the hereditary substance cannot form anew; it can only grow and multiply and be transmitted between generations. His biology focuses on the species and not on the individuals since any external influences that changes the individual dies with it. The species goes on despite changes in individuals (Pearson 1999:5-6).

Weismann's genealogy means that the substance of life is immortal, it is an inhuman force. Similar ideas are today expressed by Dawkins (1989) and his selfish gene in which he suggests that there is no design or purpose. DNA just is (Pearson 1999:10). However, there is often a conflict between the interests of the gene, the organism and the species. So what is being selected? Weismann's germ cells directed the somatic cells and not the other way. For him, it is the germ line that descends. Williams suggests that it is the gene that is selected as it is what enters the next generation and does not end with the body. The organism is then just a finite bearer of the infinite immortal germ line. The idea of genes as the main units of selection would in the neo-Darwinian concept explain why we have collective behaviour. Cooperation is maybe not the best for an individual, but it is for the *genotype* that wishes to reproduce future beings. Thus, the gene is selfish. In this view, an organism is just a vehicle needed for genetic transmission (Grosz 2004:79-82). However, Goodwin argues that unicellular organisms and plants have no separation between germ plasm and somatoplasm. Based upon this, Pearson (1999:150) argues that there is no hereditary essence like the germ or the DNA that solely reproduces life.

Another neo-Darwinist is Dennett (1996) whose idea of processes in natural selection is *algorithmic*. This consists of logical, formal and mindless systems that have laws or deterministic principles that direct them. These are not material and have no determinable result. An algorithm consists of several steps that need to be finished one by one. However, something needs to be actualized and become existent to be called a step. The step can only be isolated from another step

if it is taken out of duration, out of the changing process itself (Grosz 2004:52, 205). This is, as we have seen, a spatialized view of the world.

The complexity theory within contemporary biology has sought to go beyond neo-Darwinian genetic reductionism and determinism. Neo-Darwinians do not attribute agency to organisms as they are not real entities, they are just vehicles for genes. On the other hand, complexity theory argues that organisms have innovative capacities (Pearson 1999:149). Complexity theory suggests a co-evolution of organism and environment. In Darwin's natural selection, it is the environment that selects the organism. In the idea of co-evolution, the organism may just as well select the environment (ibid:146).

The creative evolution

It is time to describe Bergson's evolutionary ideas which are quite different from the evolutionary thoughts that have been used in social sciences. Bergson argues that evolution is a creative and productive power. Consciousness is seen as the principle motivation of this biological evolution, but it has no teleology, no goal. Evolution is a differentiation that is unpredictable but not accidental. Differentiation and material resistance are interdependent and individual substances are actual phases of becoming (Borradori 2000a). Thus, the only way to really demarcate different life forms is in the virtual tendencies rather than their actual states (Pearson 1999:47).

For Grosz (2004), the evolutionary residue are not to be seen as losers, but rather as the undeveloped, or to use Bergson's words, an unactualized virtuality or a virtuality actualized along other lines.

Therefore, Bergson and his followers argue that the neo-Darwinians reduce evolution and the organism to fixed states, preferably to the genetic code, the germ or the algorithm (Grosz 2004:206). For Bergson, the impetus is not located in a particular point or part of the organism. Likewise, Nietzsche would argue that not only the gene is selfish, but the organ, organism and environment are equally selfish. None is more important than any other (ibid:129).

Like Weismann, Bergson argues that evolution is deeper than the individual effort, such as it was argued among Lamarckians. However, Bergson is different from neo-Darwinism in that complexification cannot increase by simple accretion since every new element actually recasts the whole. This cannot have to do with simple chance. Complexity in evolution is not just the effect of exogenous natural selection (Pearson 1999:45-46).

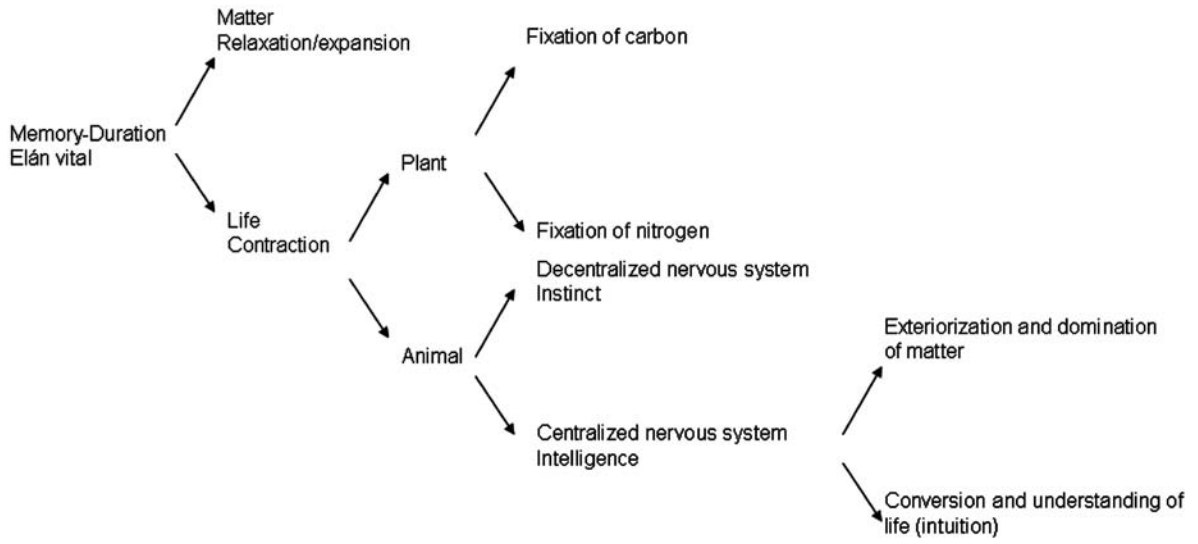


Figure 23. Bergson's view of evolution (modified from Deleuze 1991:102).

Bergson suggests that life should not be defined from specific characteristics but rather the *tendency to emphasize the characteristics*. Plants and animals are two such divergent tendencies of life (Bergson 1998:106). However, the classification is more diverse and complicated today than when Bergson lived. Today animals and plants are only two of five kingdoms. The other three are fungi (mushrooms), protists (algae) and monera (bacteria) (Margulis, et al. 1994).

Despite this, his idea of diverging tendencies is still relevant. Bergson argues that the plant tends toward fixity and the animal tends toward mobility (figure 23). Furthermore, there is a relationship between mobility and consciousness. The nervous system comes from a division of labour. It brings a function to a higher degree of intensity and precision. Consciousness is in proportion to an organism's power of mobility. He claims that even plants can have consciousness if they are mobile (Bergson 1998:109-111).

Deleuze has also on several occasions studied evolution. First, he used Bergson to investigate the virtual and creative part of evolution. Later he focused on complex systems that evolve from interiorization of components and differences. Together with Guattari, he emphasizes *rhizomatics* that break with the genealogical and filiative evolutionary models. They argue that there is no transmission of flows, only a code that is communicated, that gives information to the flow. Hereditary transmission is here pushed to the side. Deleuze argues that heredity is not given by the species or the DNA, and therefore the organism is not a vehicle for genes. It is transfigured and made vital through the becoming of a new individual (Pearson 1999:9-10). Individuation is less influenced by exogenous mechanisms. However, he still believes that organisms and individuals are places where transformation takes place (ibid:77). In his later works, Deleuze no longer appeals to a single principle of evolution, like Bergson's élan vital. This is because analyzes of symbiosis show that the branches of evolutionary trees are bushy; there is not just one ancestor but several (ibid:166). He moves partly away from the organic world and emphasize the becomings of matter and materiality, this I shall turn to later on.

3.4.5. Pure perception and pure memory

Since Bergson's evolutionary ideas largely focus on consciousness, it is important to explain the way in which memory and perception are related to each other as these are included in consciousness. Bergson emphasizes that perception belongs to space and memory to duration. These are seen as different tendencies of our consciousness and they need to be explained in order to understand how the consciousness relates to matter and time.

Perception

Perception is the tendency to organize data in space. This is used in causal descriptions (Borradori 1999a). However, perception is not made up of discrete perceptions, but they are integrated in the movement of the body in time and space (Giddens 1984:46-47).

Bergson uses the concept of image to disregard the idea that matter has the power to produce representations in us, which realism and materialism argue. Therefore, matter is not different from the representations we have of it. Bergson claims that we do perceive the things where they are. Our perception coincides with matter. There is only a difference of degree between perception of matter and matter itself (Deleuze 1991a:25). The image is less than a thing but more than a representation, it differs only of degree. The image is in-between the mental and the external. It is self-existing, meaning that it reveals itself in a pictorial manner. However, the image of a material thing is perceived as a representation. During perception the image of itself is transferred to an image for the perceiver. Since the perception does not add anything, but subtracts, the representation is a waning of the image. Selection occurs and only what is important for bodily functions is of interest (Borradori 1999a). Thus, the brain retains from matter only what interests it. Perception is therefore not the object plus something else, it is the object minus that which does not interest the

perceiver (Deleuze 1991a:25).

Therefore, matter is an aggregate of images and our perception is not an image of an image, it is the same image. The difference is the mobility of images. Our moving body is the centre of our universe and when it moves the orientation of the universe changes. The brain does not produce images, it just directs them into bodily action (Grosz 2004:166-168).

Memory

The word memory is a mixture of two different kinds of memories. One is habit-memory which is the way to gain automatic behaviour by repetition. Habit-memory is combined with bodily perception and relates to space and to the intellect. This is Turner's (1994) habit. When it comes to our habit-memory, we can usually only deal with one conscious task at a time and only for a short time (Norman 1993:131). Although we have a short working memory it can be extended through cognitive artefacts. To write something does not change memory but it changes the task of remembering to writing (ibid:78).

There is also a pure memory of personal memories which is unconscious. Pure memory evolves automatically and does not partake in representation. This also relates to Bergson's description of instinct (Pearson 1999:34). The pure memory is best explained by Bergson's memory cone (figure 24).

An inverted cone stands with its point (S) downwards on a plane (P). This plane is the plane of actual representations, the objects of the world. The cone represents true (regressive) memory (SAB). At the base (AB) we have unconscious memories that come up during dreams. While descending we find an infinite number of past regions that are closer or further away from the mobile present (S) (Deleuze 1991a:88). The past has a series of planes that represent the whole of the past in contracted forms (a-b). The present (S) is when the past intersects with the body (Grosz 2004:180). S is also the place of the sensorimotor, where memory is near action (Deleuze 1991a:88).

Memories descend down the cone from the past and affect present perception and action. Thus, Bergson argues that we move from past to present and from recollection to perception (Deleuze 1991a:63). The human being switches between memory and perception. When we try to remember, we take a step into the virtuality of the past (SAB). When we meet a virtual current we have to actualize and recollect it (a-b). Thinking takes place when pure memory moves into singular images (a-b). This movement takes place because the cone is supposed to rotate, like rotating the lenses of a telescope. First we see nothing, but by adjusting the lenses we get a clearer picture (a-b). The memories that come from different levels cluster around "shining points of memory". These are multiplied until memory is expanded (Grosz 2004:182). Thus, the movement from interpenetration to fragmentation goes from virtual unity to actual multiplicity. The reverse process is also virtual and the cone has a second movement that is contraction (Bergson 2004). At the point (S), the present, memory or duration is in its most contracted phase, and perception is at its most deflated phase,

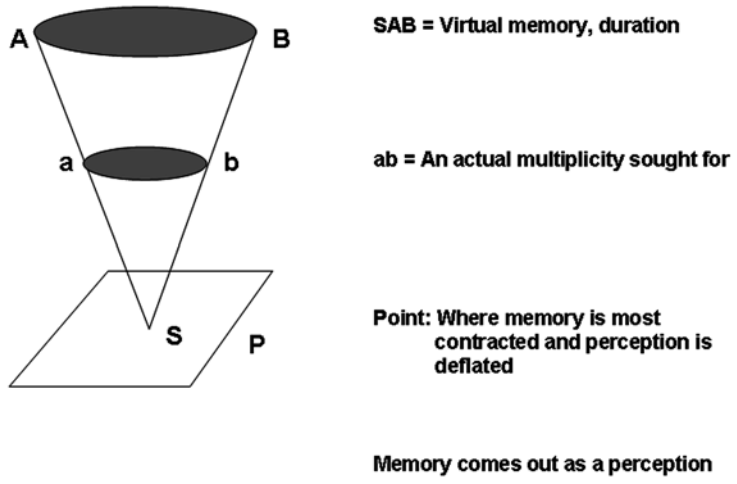


Figure 24. Bergson's memory cone, modified from Bergson (2004:211).

making perception spatial and material, to which we are adapted (Deleuze 1991a:88). Therefore, memory needs to be actualized and made into perception before we can represent it. In reality what we perceive is a composite of both memory and perception (Borradori 1999a). This means that the present is partly known from the past (ibid). Pure memory is therefore progressive and it precedes images and semiotic signs and is unconscious (Giddens 1984:46).

Thus, perception is not succeeded by memory since every perception already is a memory. Rather, memory is created step by step with the perception (Bergson 2001). The tendencies that perception and memory tries to impose on each other takes place in the virtual, not in the actual experience (Borradori 1999a). The tendencies of perception and memory affect the reproduction of virtual and actual ideologies, which will be described later on.

3.4.6. Intelligence and instinct

Many evolutionists believe that the human intelligence, and our social and "cultural" activities, are part of a self-generated evolution, set outside natural selection. For example, Dawkins (1989) sets mind outside biological evolution, and speak of a "*memetic*" evolution. *Memes* work like genes, and relate to atomistic units that can be ideas like science, democracy, etc. These are not products of genes, they rather resemble Platonic ideas (Grosz 2004:55). I do not intend to follow the memetic evolutionary ideas. I intend to develop a virtual ideology later on and important here is Bergson's ideas of consciousness which shall be described below. This is crucial in order to understand the connection between human beings and materiality.

First let me briefly describe how one might argue that human consciousness has developed. Donald (1991) believes there are four evolutionary stages of the human cognition and consciousness: (1) *episodic memory* is something that apes also have. It means to experience complex events without abstracting from it. (2) *Mimesis* is the capability to form internal representations connected to desire and to realize them by mimicking. (3) *Mythic* relates to the development of language which makes it possible to communicate detailed concepts to each other. (4) E*xternal representations* is when mimesis and language are extended to external cognitive artefacts (Norman 1993:122-123). The second and third stages are hypothetical. However, even the other two stages are problematic. How does evolution proceed from one stage to the other? How would an intermediate phase between two stages look like? This is once again a spatialized view of separating and juxtaposing in which the whole is split up into static fragments and clear cut stages. Bergson follows another path, one that will be fundamental for my later discussion of virtual and actual ideologies.

As shown before, Bergson argues that consciousness has to do with mobility. Bergson does not reify the important role the nervous system is generally believed to have for the consciousness. According to him, neither mobility nor consciousness needs such a nerve system. Even the simplest animal is conscious in proportion to its mobility. The nervous system does not create this function but makes it more intense and precise (Pearson 1999:47-48).

For Bergson, consciousness consists of two tendencies; instinct and intelligence. Bergson argues that "*the cardinal error which, from Aristotle onwards, has vitiated most of the philosophies of nature, is to see in vegetative, instinctive and rational life, three successive degrees of the development of one and the same tendency, whereas they are three divergent directions of an activity that has split up as it grew*" (Bergson 1998:135, original emphasis). Bergson sees these forms of life as differences in kind and not of degree. The problem for us in understanding this is that we do not transcend our intellect since it is with the intellect we understand other forms of consciousness (ibid:xii).

Instinct and intelligence are not self-contained and mutually exclusive. Both intelligence and instinct were once interpenetrating and still retain parts of their common origin. They can never be found in a pure state since they are tendencies and not things (ibid:135). These tendencies are both rooted in duration that makes all life, all change and all becomings. Instinct and intelligence are two solutions to the same problem of confronting and manipulating matter. Knowledge exists in both

instinct and intelligence. It is acted and is unconscious in instinct and thought, and it is conscious in intelligence. Intelligence reaches a true self-possession in human beings but it exists in other animals as well (ibid:142-145).

Our knowledge is dependent on the form and structure of intelligence. Intelligence has an analytic, external, practical and spatialized approach (ibid:189, 206). Bergson argues that "the human intellect feels at home among inanimate objects, more especially among solids, where our action finds its fulcrum and our industry its tools […] our concepts have been formed on the model of solids" (ibid:ix). The intellect concentrates on repetitions, linking the same to the same, and in this process it is distancing itself from duration. It dislikes what is fluid and solidifies it (ibid:46).

The relationship between consciousness and matter has been formed as instinct for most animals. Instinct does not represent its knowledge, it acts it. Its instruments are part of the body and are adapted to their objects since the instruments have evolved in conjunction with the objects. Therefore, the insect has a highly particular knowledge of a narrow category (Grosz 2004:226). Animals that possess tools have them as part of the body that uses it, such as a bee sucking nectar. There is an instinct that knows how to use this tool (Bergson 1998:139). Thus, instinct uses and constructs organized (internal) instruments (eye, nose, trunk, wing), and intelligence uses and constructs unorganized (external) instruments (artefacts, buildings, writing) (Grosz 2004:233). Instinct is specialized, and it is the utilisation of a particular instrument for a particular object. Intelligence is not specialized, and its instruments are imperfect and external to the body. However, since it has been made from unorganized matter, it can be made into any form there is. It can serve many purposes and free the living being from obstacles (Bergson 1998:140-141).

For Bergson, intelligence is pragmatic orientation. The analytic and quantitative orientation of intelligence makes it impossible to obtain immediate access to life. Humans have developed intelligence to survive, to be able to make external tools and language. Thus, the mechanical invention has been the most important feature of human intelligence. Inventions are not just the result of intelligence, they have also directed intelligence since the intelligence produces objects to make other objects (ibid:138-139).

Intelligence is the knowledge of a form and instinct is the knowledge of matter. For this reason, intelligence is unable to understand life, and it treats everything mechanically whereas instinct proceeds organically (ibid:149, 165). The intellect can only form a clear idea from the discontinuous and the static. It works from the immobile and tries to understand temporal movement by juxtaposing immobilities. It can decompose and recompose as it likes (ibid:154-157). The intelligence that always creates something new is unable to understand its own creative evolution. Since the intellect needs stable forms and objects that can be controlled, the unforeseen and new is resolved into the old and the same (Pearson 1999:53).

Our intellect has created signs that are static and stable, so we can communicate through symbols. For this reason, Bergson is suspicious of language. For him, language divides the continuity of duration and this leads us to illusions. Bergson claims that "language is not meant to convey all the delicate shades of inner states" (Bergson 2001:160). This is because we perceive words as external to one another (ibid:163). However, there is a difference between the signs used by intellect and by instinct. The specificity of human language is that it is mobile, meaning that it can be applied to anything in space. However, the instinctive sign is adherent and in duration (Pearson 1999:55).

There are others who make similar distinctions of consciousness. Giddens' *discursive consciousness* is reflexive. It is what human agents in a discursive manner can say about their own actions. In discursive consciousness, the agent has to think what he or she is doing. One must be able to put things into words (Giddens 1984:45). The *practical consciousness* is how to go on and shape action and agent. It is what agents believe about their own actions which cannot be expressed in a discourse. A

stable practical consciousness creates ontological security (Dornan 2002:307; Giddens 1984:374). It is usually seen as the reflexive monitoring of conduct (Giddens 1984:44). Practical consciousness is not possible to express in words. This may have to do with the earliest experiences of the infant that shapes its basic security system, in which anxiety is controlled. This phase predates linguistic competence (ibid:49). In Bergson's terminology the discursive consciousness relates to the intellect and the practical consciousness to instinct.

Norman makes a difference between *experiential* and *reflective* cognition. I believe both relate to Bergson's idea of intelligence. The first relates to a state when we perceive and react to the events around us. We do this both efficiently and without problems. This skilled behaviour is something we learn after long training (similar to Bergson's habit-memory). The reflective way is to contrast and compare thoughts and actions, which leads to new ideas and answers. These cognitive differences are not separated but technology forces us into one direction. Experiential cognition may make us confuse action and thought. It is a data-driven processing whereas the reflective cognition treats concepts and plans. This is slow and needs external support such as books or other artefacts (Norman 1993:22-25).

3.4.7. The body without organs

We are still discussing the human being. However, as has been shown, there is a virtuality that unites the human being and matter that can be used as the foundation for archaeological studies. I shall focus more on the material in the next chapter when we introduce some Deleuzian additions.

The human subject is not in the centre, in some of Deleuze's writings. He explains the subject as a free anonymous *nomadic singularity* that traverses human beings, plants and animals. It is not dependent on "the matter of the particular individuations [actualizations] nor on the forms of their personality" (Pearson 1999:88). Deleuze sees organisms as "vehicles for the transmission and communication of intensities and singularities" (ibid:129). The organism is made up of heterogeneous components that work as an acentred multiplicity that always change. Multiplicities form a rhizome that may become segmented or stratified. A rhizome is a collection of heterogeneous components. It is "anti-genealogical" as it works in the middle and has no goal. It works through variation and expansion. The rhizome is like an infinite open system (ibid:156-158).

Important here is Deleuze and Guattari's (1988) notion of the *body without organs*. As discussed with Bergson, we distinguish objects as the actualizations of the virtual flows. These actualizations have crossed a threshold (individuation) that separates the multiplicities from each others. However, this virtual flow does not want to be restricted by individuations, it has a desire to an unconstrained flow. This is the body without organs. If this desire and interruption of the flow did not exist, the actualized world would not exist. The body without organs is not broken down into parts, but it is still an abstract body that attracts and repels the flow. In this process it creates the actual world we perceive. The body without organs is a site of non-coded flows. It let intensities pass or produces and distributes them in an intensive spatium. The body without organs is what exists before strata or actual multiplicities are formed. Therefore, it relates to the energies and becomings of matter that is unstable and unformed. These becomings have free flows of intensities and nomadic singularities (Deleuze and Guattari 1988).

The body without organs deals with the organism's organization of organs. Likewise, Maturana and Varela see the organism as a metasystem which consists of components that have a minimum of autonomy. The organism has a desire to preserve itself as a unity and thus evolves as a conservative system. Similar to Deleuze and Guattari, they argue that the organism limits the creativity of its components as these exist for the organism (Pearson 1999:152). Technology and architecture can be attributed with this as well.

Although we have now reached a point where the human is no longer in the centre, we are still mainly "organic-centric", meaning that the focus is still mainly on the organic, as if it is

separated from the non-organic. We have not gone deep enough to explore matter in materiality. To do that, we must begin with what lies in-between the virtual and the actual. This will be the basis for the polyagentive archaeology. This is *polyagency* and it is a body without organs with a social significance.

3.5. Polyagency and polyagents

Polyagency and polyagents are concepts that have changed their meaning since I originally used them (Normark 2004a, 2004b, 2004c). Today, they have not much to do with "agency" in Gell's (1998) usage. Instead of using a new concept, I will simply redefine it since parts of its original meaning still is valid.

3.5.1. Polyagency – intensive processes in-between the virtual and the actual

Originally, by polyagency was just meant the causative capabilities of materialities and intangibilities (Normark 2004a). Now, I see it as a phase of becoming and the word agency here relates to something active. Poly means many, and both words together relate to the plurality of becomings that any actualized entity generates.

Polyagency begins in the intersection of two actualizations/entities that share a milieu, either with a human being or another materiality. What is virtually inside these actualizations/entities is not unimportant, but the actualizations can be aligned to connect and create a *plane of coexistence*. Polyagency is how these two actualizations transform. The becoming is how the encounter between entities releases them from their actualizations, objects, entities, systems, series or organisms. In this process, the whole is transformed (Grosz 1995:134).

The short version is that polyagency is a collective term for *intensive processes between actualized entities whose virtualities generate a multitude of transformations*. Polyagency consists of four interrelated concepts that describe inseparable phases of becoming: the in-between, individuation, stratification and the time-shelter. These intensive processes also occur in the formation of actual entities where there is no human relation. Polyagency is used to explain how matter and materiality changes in encounters.

These processes begin as a body without organs and ends in the actualized strata of matter and social interaction, a body with organs arranged as a rhizome.

The in-between

We cannot reach the virtual, and the actual is static. The only road that comes close to the virtual lies in-between. Polyagency is the label for what is no longer virtual but still not fully actualized. It is the way two actualizations interact and change in relation to each other. This is the same process, since in order for an actualization to change, its old actualization needs to be undone. This undoing takes place in-between. Two actualizations (beings) become in their mutual milieu, in Plato's *chora*, the receptacle, the in-between, which cannot be represented (Grosz 1995:84). It cannot be given any particular property, quality, identity or form, because if it is, it will cease to be intermediary and it will become an object (or a quality or a property). The in-between is what creates all qualities without having any qualities itself apart from bringing other actualizations into existence. The in-between is only designated by its function to bring into the world. It has neither existence nor becoming. The in-between is there to nurse, support and protect; and therefore it lacks an ontological status. It is the space without space, between being and becoming, the space that creates their separation and also makes them coexist and interchange (ibid:114-116). Thus, a line of becoming cannot be described by connecting points, it has only a middle. Becoming is not one, nor two, nor their relation, it is in-between (Pearson 1999:169).

The encounter between two actualizations and their immanent virtualities make them change,

both internally and externally. Thus, all transformations occur in the in-between, through various intensive processes. It is the only place where becoming overcomes the impetus to cohesion and unity. The in-between defines the space of a virtuality that always may change its actual identities. Things are both done and undone in the in-between (Grosz 2001:92-93).

In short, when the virtual is actualized into the entities our intellect identifies, this does not take place in the actualized entities themselves. The in-between is neither internal nor external to the entities. Therefore, it lacks a spatial location. When two actualizations (such as a causeway and a human) interact they change each other, but this does not primarily take place in either actualizations as these are static entities. It takes place in-between and affects them both as a whole. This becoming is only seen in the actualizations as soon as the change has been individuated and then it has ceased to be in-between. By then it is immanent to the entities.

Individuation

An *individual* is any entity which is the result of an *individuation* process. Since the word individual also is associated with personhood and consciousness, I mainly describe individual entities (DeLanda 2000b:2).

Matter is not homogenous. It consists of singularities that always diverge in their actualization. It is in the intensive where this flux and differentiation occurs. Intensity relates to *thermodynamics*, processes driven by intensity differences. A singularity is a discontinuity, a kind of intensity where something specific is intensified, concentrated and differentiated, like when water turns into ice or when metal melts. The thing itself is what is being differentiated. A singularity is also a kind of membrane between the inner and outer. The singularities are unpredictable even if they are deterministic. They guide intensive processes that differentiate into entities (DeLanda 2000a:7). The intensive is *non-metric* as opposed to the metric structuration of the actual individuation that emerges. For example, if a container of two gallons of boiling water is divided into two containers of one gallon each (becoming a difference of degree), the water would still be boiling, it has not divided in two. Therefore, the intensive is a difference in kind and not an entity. Multiplicities are meshed in a non-coded virtual continuum of an immanent and abstract space. The virtual multiplicities differentiate into the intensive and finally the actual emerges through various symmetry-breaking events of this intensive spatium (DeLanda 2002).

An individuation is the result of such symmetry-breaking events. The individuation forms a difference between the virtual and its actualization. Individuality is never fully realized since this can only be done in relation to a completed reality and since vital properties are tendencies and not states, this never occurs (Pearson 1999:43, 94). Becoming is not something that happens to an actualization as this would mean that the actualization is given and substantial. The actualization can never be fully identical with itself. A being has no unity in its identity, the unity lies in its difference. Therefore, individuation is not a return to unity, it is passing out of step with its actualization (ibid:90-91). Otherwise it would be a static world where time has been erased.

Individuation is a process of self-organization. In its most simple form this is a endogenously-generated stable state where a state of minimal energy work as an *attractor* for a process. DeLanda (1999:33) exemplifies this with a soap bubble that is formed from the interactions of molecules that seek a point where there is a minimum of surface tension. The soap bubble is formed by a *topological form* (a point in space of energetic possibilities) that controls the molecules. Thus, the sphere emerges as a process, there is no essence of "soap-bubbleness" that is given from the outside, like hylomorphism suggests. This is an open-ended becoming since the same topological form can create other geometrical forms.

Deleuze argues that life individuates by closure to the external, such as membrane and skin which are *territories* that communicate between interior and exterior (which never are absolute) (Pearson 1999:210). However, this process is not just organic or human, it concerns everything,

like soap-bubbles, pencils and engines. Individuation consists of processes that ex-centre and self-exceed. It is the self-organization of systems that are temporal and becoming more complicated with time and there is no way to predict their outcome (Grosz 1999:27, 2004:33). Individuation is also a matter of scale. A causeway is an actualization and so are the various stones in it. All materiality form boundaries or shelters in their interaction with other actualizations.

Stratification

Stratification of the non-coded flows gives matter an individuated and coded form and locks intensities into redundant systems, and molecules into larger entities. A stratum consists of coded milieus and substances (Deleuze and Guattari 1988:502). There is a double articulation of the strata that create traits of expression and contents. This means that matter both turns into physical substance and function, and semiotic expressions (signs) (Deleuze and Guattari 1988:143). I shall return to the semiotic part when I discuss indexical polyagents.

These strata (energetic, physico-chemical, organic, social) operate by coding and *territorializing* (Pearson 1999:152-153). I will mainly use this later concept in a physical case. I see territorializing as spreading on the behalf of other strata and actual multiplicities of the same stratum. It is a will to power. The other strata and actual multiplicities are deterritorialized and reterritorialized.

In the physico-chemical strata, the code for forms is located in three dimensions of the formed structure. In the organic strata, the code is a one-dimensional structure that creates the genetic code. This code interiorizes the intensive individuating factors and the organism evolves into a conservative system. The interiorization creates an increasing complexity of the life forms. These are the centres of envelopment (DeLanda 2002:163-164). This complexity does not exist in non-organic matter, but technology and architecture can be seen as strata that through the human catalyst increase the complexity of matter that would have been impossible otherwise.

Once an individuation has taken place, it will hide the intensive processes and tendencies that brought it into existence. This also relates to polyagents formed by human activities. In this case, an important second individuation process takes place, which primarily is what the concept of polyagency focuses on. The formed strata or actual multiplicities can be destratified or deterritorialized, such as when limestone boulders are quarried out of the bedrock. These actual multiplicities are reterritorialized with other actual multiplicities (saskab, ceramic sherds and soil) to form a causeway in a second, third, fourth, etc. individuation process. This new individuated causeway is made up by various elements and forms a new territory. At the same time it works like a rhizome (which is a deterritorialized network). From the territory of the causeway, social territories, such as places where serial encounters occur on the causeway, may emerge. Existing social territories may become deterritorialized, like when social units change their constellations when a causeway is constructed through a settlement. Thus, these territories are affected by the rhizomatic structure that is immanent to the causeway. A new product, an indexical polyagent, has emerged with the capacity to interact with other individuations. The tendency of this individuation is open-ended. The various strata that once made up the different parts of the causeway still affects the appearance of the causeway (erosion from weathering and walking changes the physico-chemical strata of the causeway).

However, to see a causeway as consisting of a conglomerate of separate strata limits the becomings of its various parts (limestone boulders and saskab) since these exist for the causeway (they are organs for the body). A causeway can be seen as a body without organs that has become stratified, coded and territorialized. The stones in the sidewalls establish a form that is maintained until the stones are removed. The causeway can be seen as a new stratum or territory. However, this actualized entity is always open to its own undoing. It is always changing.

The individuation processes when stones, ceramic sherds, soil and saskab become a causeway, are hidden inside the new constellation. The causeway is therefore an individuation, a stratum

and a territory that could not exist without the processes of territorialization, deterritorialization and reterritorialization that do not have any absolute boundaries, since when in the construction process does the causeway become a causeway? Is it in the staking out of its sidewalls or is it when the space between the sidewalls is filled with material? When does it cease to be a causeway? Is it when half the blocks have been removed, or when there still are slightly detectable but scattered traces? The answer to these questions is that *the causeway is a process of emergence, not an entity*. All polyagents are spatialized moments of a durational process, they are actual. The actual is where we have fully formed entities and here the intensive is hidden in its differentiated geometric space (DeLanda 2002). This hiding forms *time shelters*.

Time shelters

We perceive the world as a difference of degree in which individuations/strata/actualizations/entities have an internal and an external world. The inside of this actualized boundary/territory is in itself virtual, although it is a physical body that we interact with. This virtuality is hidden in relation to the virtualities of other polyagents, at least seen from our evolved habits. However, this boundary is not absolute. The causeway eroded and when its internal parts were shown, it needed to be repaired since the virtualities of the interior changed the actualized pattern on the surface.

From the polyagentive view, it is in the encounter with other polyagents that polyagents change their actualizations. We may order actualizations as series or as groups, but we still see the series or groups as more disorganized than the actualizations that make up the series or groups. This belief in disorganization is what humans try to overcome in their daily lives and interactions with actualizations. Our intellect strives to find regularities among actualizations (Normark 2004a).

The individuation forms a frame or a territory that creates internal boundaries in the world that mediates between inner and outer. A boundary of an actualization is a way to deal with other individuations. Boundary crossing, like when a polyagent interacts with another polyagent, leads to a discontinuity in actualized relations, but not in their virtualities. These discontinuities provide shelters for spatial and temporally folded settings. The actualized time shelters are persistent forms of event-discontinuity (Wood 2000:226). The time shelter shelters an internal duration that remains united as an individuation, until it breaks up when it is actualized/deterritorialized in another direction. Thus, the interaction between actualizations forms time shelters immanent to the territory one actualization shelters. These time shelters are of different durations from our human perspective, but polyagency itself is not temporally or spatially located since it is not located in either individuation, but lies in-between.

Causeways are such actualized time shelters that shelter various foldings of duration (the durations of limestone in bedrock, the quarried limestone blocks, saskab and plaster). They have a semiautonomous spatio-temporal organization, which means that they consist of many simultaneous territories. Thus, a polyagent is a time shelter, but only in relation to its various phases of individuations.

Within a social world there is a constant boundary crossing between polyagents that deterritorializes and reterritorializes different strata. We use polyagents and they shape our consciousness and knowledge of the world. For there to be a reproduction, time shelters act as the environment of the social formations. Existing polyagents are the territorial surfaces from which human goals emerge and from which the social world is constructed. This means that existing polyagents direct our goals (Normark 2004a).

Summarizing polyagency

Polyagency is in-between the virtual and the actual. It is where matter is individuated in relation to other actualizations. This cannot be given a separate location or spatialized time, it is a space without space and a time without spatialized time. The individuation forms surfaces (territories),

or time-shelters, that interact with other individuations. The time-shelters break down from an actualized perspective but continue virtually. Take the polyagency of a pencil as an example. It is an actualization, an individuation of the virtual that consists of singularities that has formed various multiplicities and strata (graphite and wood). These have been deterritorialized from the graphite mine and the tree, and then reterritorialized into a new individuation and territory, at one or several factories. The final result is a new territory, a pencil (which is what I later will call an indexical polyagent). It has a physical body that is given an identity and an action by human beings. Thus, it is a social construction from a humanocentric perspective. We define this identity as a pencil related to the practice of writing (a quasi-object). It is also a time-shelter that has a "biography" or "life-history" defined by actualized stages of individuation that we abstract from true duration (manufacture, usage, discard). As an individuation the pencil affects other individuations (paper, pencil case, writer). If the intensity of bending the pencil reaches a singularity where it snaps, the pencil breaks into two pieces. There are now two individuations, but the virtual and the polyagency has not split up. It has diverged into two lines that share the same original virtual impetus. As a time-shelter the pencil has also divided and folded new durations. However, the capacity of the pencil to affect and interact with other individuations is still there, but slightly changed (with one broken part in a rubbish bin). Thus, the polyagency of the broken pencil is not located in a particular individuation. Polyagency is in-between and lacks an identity and social construction.

The reason why I include the physical formation of matter here is that these processes are present even in the simple interaction between a human agent and a pencil. This is because the virtual, the intensive and the actual are not in a hierarchy but overlaps. Multiplicities are not archetypes but are emergent properties of dynamic networks. The multiplicities affect and are affected by the intensive and the actual (DeLanda 2002).

3.5.2. Polyagents – the actual multiplicities

My simple definition of polyagents is this; *any actualized entity or a combination of entities that can be in physical contact with and transform other entities through the process of polyagency*. Since all actualizations have this capability, it means that an actualization is exchangeable with a polyagent. However, by polyagent is implied the actual physical interaction between actualizations. Polyagents also share some of the capabilities of an actant but a concept or a statement can never be a polyagent as the actant is for the technoscientists. Polyagents are only existing objects (material or intangible from the humanocentric perspective) in the actualized world. Although this definition relates to much of matter and not just "material culture", we need to elaborate upon the concept of polyagents in order to distinguish matter and materiality from what others call "material culture". We need to find the polyagentive equivalent of material culture. This is the indexical polyagent (see chapter 3.5.4.).

Indexical polyagents are not part of our genome. We are born into a polyagentive network and acquire it from our experience. From our perspective, the polyagentive network is *epigenetic*. Language is also epigenetic since it needs to be acquired but it has a history of its own. It becomes our own past and we continue it as our own. Therefore, we acquire a world that is not our own, although it shapes us. It is not lost when we die since it is carried on by materialities, such as technology and architecture (Barnet 2004). This epigenetic structure is not transcendent, it is immanent to everything around us. Stiegler (1998) calls this the *epiphylogenetic* structure. The human being develops from three kinds of memories: genetic memory, memory of the central nervous system (epigenetic), and technological memory (epiphylogenetic memory, which Stiegler sees as transcendent). Language, techniques and technology belong to the epiphylogenetic structure since they are memory supports.

Like Bergson, Leroi-Gourhan (1993) argues that the human evolution is dominated by an exteriorization of human capacities into technology. Technology has shaped us as organisms.

Contrary to Bergson, but in line with Deleuze, Leroi-Gourhan also suggests that technology creates its own milieu in which it evolves, separated from the human. Technology guides the invention process itself by technical tendencies. However, in contrast to Deleuze, Leroi-Gourhan believes that the evolution has been guided by archetypes. This makes pure invention from no predecessor impossible (Barnet 2004).

The capacity of anticipation of technical objects presupposes a technical object (Stiegler 1998:81). Anyone who produces an object presupposes the object's past, present and future. Therefore, technology itself has created its own milieu (Barnet 2004). From such a perspective it might be useful to see what Gell (1998) tells us about objects.

Although Gell maintains a humanocentric view of objects, his ideas are of relevance in developing the polyagentive archaeology in the actualized level. Gell defines an agent as anything or anyone "who causes events to happen in their vicinity" (Gell 1998:16). Agency is relational, since an agent always has a patient and vice versa (ibid:22). Gell distinguishes "primary" agents (intentional beings) from "secondary" agents (objects) "through which primary agents distribute their agency in the causal milieu" (ibid:20). In an interaction between these agents, one is always momentarily exercising agency and the other is a patient of this agency, although there always exists a resistance since the patient is not passive (Ingthorsson 2002). Gell focuses on art but to him anything can be considered as an art object (such as human agents or artefacts) since his theory concerns the "social relations in the vicinity of objects mediating social agency" (Gell 1998:7). I call this kind of polyagent indexical polyagent, which basically is any polyagent used or manufactured by a human being (the polyagent is the index of human action). I shall develop this later on. All artefacts or the traditional "material culture" are indexical polyagents. Past intangibilities can never be an indexical polyagent from an archaeological perspective. An indexical polyagent needs to be preserved in matter.

I find Gell's definition of agency useful if we consider the nature of the archaeological data, even though Smith (2001:167) believes Gell's definition of agency blurs the line between action and instrument. However, this blurring exists in most humanocentric archaeology anyway since an artefact tends to be associated with a practice and an intentional being. We do not have living human agents. Even if the artefacts do not contain the past action, the current actualizations still retain the virtual tendency to make events happen, to change virtualities among other actualizations. Thus, there is no initial need to attribute human agency to the materiality; it has its own polyagency and virtuality.

Latour argues, that to think in terms of human subjects being agents and objects being things or patients used by agents, is not of great help to understand how these interactions work. He calls them *actor-actant* instead (A. Smith 2003:189). Actants are all forms of autonomous figures found in the world. They have the ability to act and include people, material objects, statements, inscriptions, human agents, concepts, organizations, skills, money, etc. (Callon 1991:135-142; Law 1992:381-384). An actant must have the capability to enlist or engage with another actant. When these two join they become one actant for a third actant (Latour 1988:159). This forms an actor-actant network in which each actant is connected with, depended on, influenced by, or strengthened by other actants.

In this approach, agency is not human or material but emerges in the relations between them. Human beings and non-humans are seen as actants that modify the other symmetrically (Ihde and Selinger 2003:5). Pickering also suggests that technology cannot be studied in isolation but that technology and the human being needs to be taken together (Pickering 2003:100). Ihde does not believe in the socializing of the artefacts. He sees them as interactants and not as actants (Ihde 2003:139).

Artefacts are non-neutral since they partly form human activities and values according to Ihde. As technologies and artefacts become more complicated, their role in affecting people

becomes greater (A. Smith 2003:184). Baudrillard argues that objects of our time are more complex than the human behaviour relative to them. Objects have become more differentiated whereas our behaviour towards them has become less differentiated. The things used to have various roles but today they have a forcible goal-directedness that has transformed them into actors, and where the human being has a role or is a spectator (Baudrillard 1996:56). I believe that materialities have always had this capability and we should therefore not neglect their importance in the past. They are our main traces of this past.

Therefore, objects are not just extensions or the result of human bodily capacities as the hylomorphic and humanocentric models see them. They are vital elements in distributed thought. What used to be seen as internalisation of thought is now seen as a gradual spreading of functions across forgeable media. Objects do not just make thought do-able, but they also make thought possible. They are part of a network of effectivity (Latour 2000).

Cognitive sciences have moved towards an ethology of assemblages where behaviour is only understood as a component of an assemblage. Brain, body and materiality are tied together in a network of activity (Pearson 1999:177). Clark (1997) argues that human beings are distributed cognitive entities that use external resources and technology in order to perform certain tasks. Certain thoughts are part of people's specific habits but their informational transformations flow through the brain and the material world, a flow that is greater than single instantaneous thoughts. Clark argues that externalities, such as institutions and technical objects, complement individual cognition and spread human reasoning across social and material networks (Pearson 1999:178).

As can be seen, there is no way in which we can remove the human being completely, but she needs to be decentralized. We need to reverse the relations in archaeology, and move away from the humanocentric-hylomorphic model. Materiality should not be seen from a humanocentric functionalistic perspective. Heidegger's hammer does not fulfil a human function, it creates functions. Speed bumps are not just "sleeping policemen". These devices are mediators, not intermediaries that fulfil a function. Technology creates complicated histories. We can never completely control technologies because they are true forms of mediation of virtualities. Latour prefers to speak about technologies as a detour rather than as something instrumental. Technology is the art of "translation" (Latour 2002:250-251). In short, to use Latour's words; the causeway has displaced, translated and modified the initial human intention(s) of the causeway. How do we move towards a less humanocentric and more process oriented view of materialities?

3.5.3. The polyagentive assemblage and the polyagentive phylum

In order to view causeways and materiality as processes rather than as entities it may be of interest to see what Deleuze and Guattari (1988) have to say about technology. They rework Bergson's creative evolution and no longer emphasize complexification through differentiation, but rather emphazises a creative involution (Pearson 1999:141, 161). Bergson gives precedence to the consciousness and the human being and separates the organic from the inorganic. His creative evolution is not *machinic* enough according to Pearson (1999:142). With machinic is meant processes that work on a number of coexisting heterogeneous elements that forces them into a new entity (DeLanda 1997:330; Deleuze and Guattari 1988). However, the Deleuzian ideas need to be modified to fit the polyagentive archaeology.

Polyagentive assemblage

Deleuze does not see our understanding of the world from the tripartite division of reality, representation and subjectivity. An *assemblage* connects different actual multiplicities from these three orders, all based in virtuality. The assemblage is a "site at which a discursive formation intersects with material practices" (Deleuze and Guattari 1988:504). In Deleuze's and Guattari's (1988:406) work, they see the human being as a component in a *machinic assemblage*. A machinic assemblage is, for

example, horse-horseman-bow or a car-driver-road. What is inside the car (wheels-door-machine) is also important since the boundaries are not absolute, but generally, the car can be treated as a time shelter that shelters other individuations. It is up to the investigator to draw the boundaries. A particular discourse/actual ideology emerges and upholds the machinic assemblage.

In order to fit Deleuze and Guattari's concept with my terminology I call this a *polyagentive assemblage*. This is a site where actual ideologies of various degrees, from macro-ideology to individual habits, intersect with polyagency and a virtual ideology (explained later). As will become apparent, this assemblage usually relates to indexical polyagents (discussed later). A polyagentive assemblage is for example causeway-plaza-pyramid. These are physically connected and do not need to include the human agent. They may also have been "functionally", "politically", "socially" and "cosmologically" connected, but this is of secondary concern. Such quasi-objects are dealt within actual ideologies that intersect with the polyagencies within the assemblage.

In order to define an assemblage it is important that the polyagents within it form a joint time shelter that is crucial to an actual ideology. The building stones within a pyramid may have little to do with the actual ideology related to the causeway-plaza-pyramid assemblage. If a pyramid is reused at a later time, but not the other structures of the former assemblage, the time shelter has ceased and there is probably a new actual ideology present at the location. The virtual ideology is still the same since it is directed towards matter itself. See chapter 3.6 for a discussion on these ideological concepts.

Deleuze and Guattari criticize psychoanalysis for reducing the machine to a phantasy. They also criticize Marxism for seeing an evolutionary line in which the human is the prime tool-making animal, the machine is derived from the tool and the tool from the needs of the organism. Deleuze and Guattari see the tool and the machine as differences in kind. They do this because they want the machine to be primary over the tool. In this sense, the causeway as a polyagent/"machine" is primary over the causeway as a "tool" for communication (something constructed to satisfy the needs of the human being). In the Marxist and the traditional materialist approach, the direction is the other way; social relations of production are external to the means of production and also to the tool and the machine/technology. Such an approach is locked within a representationalist and hylomorphic model of techniques since they are seen as extensions of the human being or society (Pearson 1999:141).

The machinic/polyagentive approach does not treat machines/polyagents as extensions of human agents, but sees them as "monstrous couplings" of heterogeneous components that change through repetition and communication (ibid). A human agent is part of a polyagentive assemblage, but from an archaeological perspective, the human is only an intermediary, a catalyst. The polyagent is primary here since the becoming of the human being also is part of polyagency. Therefore, the polyagent cannot be understood solely from the perspective of the human being as a biological organism. It is related to a polyagentive network which is the engineering agency.

Polyagentive phylum

All archaeologists classify their data and try to fit artefacts or architecture into types, classes or lineages. What are we to do with the similarities between various populations of artefacts and architecture through time and space? Simondon argues that the technological lineage begins by an invention which has a form of "essence" since it remains more or less stable throughout the lineage. However, the form also creates new structures and functions (Stiegler 1998:77). It is only in the technical differentiation that epiphylogenesis can be seen (Barnet 2004). This means that there is no absolute beginning for a technological lineage, it has always differentiated. I would see the "essence" as a certain form that is dependent on Eucledian geometrics and the "stable" spatial location of various multiplicities within this structure. However, this can never be stable, due to intensive processes that reaches singularities that recasts parts and wholes.

Technical lineages cannot be defined by their form or style, since the form never is maintained over time due to technical innovations. To define the lineages by human function is equally problematic. Barnet shows this by "computing" as an example. Computer originally meant a human operating a calculator during the 19th century. Today a computer is a node in the internet network (Barnet 2004).

Therefore, Simondon argues that we must understand the genesis of the technical objects (and other indexical polyagents) without discussing human functions since an object invents itself independent of human intention (Stiegler 1998:69). The use and function of a technical artefact/architecture is only revealed in the evolution of the object itself. Here it is useful to focus on the Deleuzians since they study immanent machinic paradigms. The human selects the best forms to realize technical tendencies, to anticipate technical forms, but this process can never be completely controlled (DeLanda 1994).

Deleuze and Guattari's notion of the *machinic phylum* means a single phylogenetic technological lineage that is ideally continuous. In their concept, this is a virtuality, also known as the body without organs and the plane of immanence. I discuss it here since it relates to technology in a more precise way than the other similar terms. Deleuze and Guattari use the term phylum with the meaning "common body plan", which through different processes can generate a variety of populations. Human beings are not just related to other organisms, but also to other materialities by the self-organization of bodies and combination processes (DeLanda 1997). This materiality is in movement and it is continuously changing. The phylum is what grows and is spread through human catalytic action. In the phylum, the human body is ramified into the machine.

The phylum is a conveyor of singularities and traits of expression. Singularities are self-organized and create new forms. The movement of the phylum can only be followed by the human being, it cannot be controlled since the phylum is the internal dynamics of technology (Deleuze and Guattari 1988:409). As mentioned, strata are more or less permanent individuated structures formed by the self-organization of matter and energy. The strata constrain the creativity of matter and energy, as these are locked up in geological, biological and social forms. A destratifying process is needed to create technology and architecture. This is when a physical structure is detached from its fixed function and creates a new function (DeLanda 1997). This occurs in relation to matter, but also in relation to a technological constellation. A chert knapper cannot knap a chert axe as he or she wishes. They need to follow the morphology of the chert. A hit with a hammerstone creates a break, a singularity, and new forms/individuations appear; in the chert core and in the flake. The chert is destratified. A gold smith needs to follow the melting temperature of gold in order to transform it to other forms. Likewise, cutting limestone and mining saskab changes the virtualities of this matter. The way causeways are used as quarries for albarradas is also a way to destratify its former constellation.

The discussion of the machinic phylum derives from the idea that this phylum is metallurgical. Metal coexist with all other matter since it can be found in wood, stone and water (Deleuze and Guattari 1988:409). Metals are catalysts that generate encounters that would not have occurred without them. Therefore, metallurgy is a consciousness of the material flow. The gold smith sees the metal as an active material with morphogenetic capabilities. It is the smith's role to create a form where the matter itself sets limits or potentials (DeLanda 1997). Therefore, Deleuze and Guattari's machinic phylum consists of a flow of matter-energy-information. Thus, it is not a transcendental hylomorphic scheme. It is still used and manipulated, but not controlled, by the human agent.

I re-label and redefine the concept of the machinic phylum as the *polyagentive phylum*. In this phylum, the metal is no longer the main catalyst, it is the human catalyst that makes it possible for certain polyagents to merge and encounter each other through various intensive processes. This is similar to Stiegler's (1998) argument when he sees the inventor as a passive observer that work from what is already in the object. These processes deal with indexical polyagents and are therefore dealt

with in the next chapter when I introduce a discussion of semiotics.

Although the phylum is a body plan it is difficult to define this plan in the final actualized forms. Therefore, for a better classification, the processes that create the body forms could be studied (DeLanda 2000a:12). Thus, to see causeways as part of a phylum from their final diverse forms, partly obscures their body form which they to a large extent share with platforms.

Causation revisited

The polyagentive process reacts back on the human being and in order for us to understand this we need to take a look at causation again since Deleuze and Guattari see technological change as a feedback loop between a social formation and technology. Each drives the other to produce assemblages or phyla (DeLanda 1997). Therefore, to understand how self-organization is common to causeways, human beings and pencils we need to abandon Bergson's dichotomy between determinism and chance. Here we end up in an advanced determinism which reuses the causation concept that Bergson removed. However, this determinism emerges in the physical interaction between non-linear causal relations where the effect reacts back on the cause in a way where it is often difficult to know which comes first. This determinism is local and multiple rather than global and unique. These relationships are called *attractors* and they govern processes which make actualized structures emerge spontaneously. Attractors are places where networks are trapped and the possible behaviours are reduced. In this reduction of a virtual "chaos" the actualized order emerges. Attractors are virtual forms that create and solve problems through various actualizations of the virtual (DeLanda 1997). They are stable pathways of development (DeLanda 2000a:12). This concerns physical processes that humans may direct, but never control.

Bifurcations are critical points of intensity where attractors change to new attractors, such as when saskab is transformed to plaster by melting. The polyagentive phylum then consists of self-organizing processes in which disconnected elements reach an intensive point where they form a more complex entity. Self-organization takes place when a new attractor emerges that differs in kind (DeLanda 1997). Certain points of intensity in the manufacture of the causeway change it to a causeway through the successive reworkings of the construction material. Every addition changes the actualized causeway and generates new individuations.

Attractors and bifurcations are singularities. Matter is a conveyor of singularities and the polyagentive phylum is a constellation of singularities that exists through certain operations. Every singularity is a stage in the process of production. If the singularities or operations diverge, two or several other phyla are created. Users and manufacturers follow the singularities in the polyagentive phylum and choose some of them to actualize and create new phyla (DeLanda 1997; Deleuze and Guattari 1988:406). The past masons created temples, range structures and ballcourts with similar techniques as in the construction of a causeway. They did not impose a form upon matter, they elaborated a consistent material, and released intense forces. The masons actualized virtualities in the limestone along divergent lines. Therefore, they did not realize predefined possibilities or forms (DeLanda 1999:37). There is a positive feedback between the polyagentive assemblages and the polyagentive phylum.

Thus, the "causeway phylum" creates specific "individuals", such as the Ichmul-Xquerol causeway that forms an assemblage with a plaza and a pyramid. The phylum is interrupted by the transversal movement of material forces by the human catalyst and creates new becomings, such as the modern dirt road connecting Ichmul and Xquerol which partly is built by materials from the causeway (Normark 2004b). In short, the polyagentive phylum is a constellation of actualizations of a virtual tendency. What can this tendency do with causeways as architectural features?

Virtual architecture

Rather than seeing architecture as reflecting subjectivization or cosmology, we could see it as

the location for becomings. Instead of investigating the symbolic meanings of buildings or their involvement in discourses and cosmologies, Deleuze shows a way to investigate the virtualities that exist in buildings and their capability to connect with and to make other series change (Grosz 2001:71-73).

Space is slackened duration; it is actual and static according to Bergson. However, in line with Deleuze, Grosz argues that space can also be virtual. She suggests that the whole of space is contracted into one location and that this point contains the virtual whole of space. Space is here seen as a moment of becoming, a space that changes with time, from one space to another. Space opens up to other spaces and accompanies events rather than processing them (ibid:116-120).

Thus, Grosz (2001) wishes to see space as heterogeneous, multiple and differential. Some locations, places or regions have specific modes of extensity. This radiates from a point (a "spatial present") that defines its own region which intersects with other regions. We can see a causeway as a spatial present, intersecting with other polyagents, such as plazas and pyramids, forming a polyagentive assemblage.

A building is usually seen as something fixed, stable and given (ibid:7). However, architecture excludes the unactualized virtualities that exist in the present, which are possible impetus for the future (ibid:150). This line of thought connects with Gell's (1998) idea of prototypes, which can be seen as materialities that act as models for the future materiality as of yet unactualized. Deleuze and Guattari's (1988) view does not help us in seeing how the "causeway phylum" could be reproduced and spread across a network. Human beings constructed them, only they had the skill and knowledge. So how do we explain the reproduction of forms and styles without introducing quasi-objects and a humanocentric perspective again? This finally leads me to the indexical polyagents.

3.5.4. Indexical polyagents

Can we reduce "material culture", the idea that objects are part of human agency or culture, to material agency? Clearly, the carvings on a stela have linguistic elements (glyphs) and symbols (iconography) that reflect human agency beyond the manufacture and use. What is the polyagentive equivalent of "material culture", that relates to past social conditions? As mentioned earlier, Deleuze and Guattari (1988:143) argue that the strata consist of a double articulation, of which one is semiotics.

Semiotics

Semiotics may therefore broaden the polyagentive approach. As Bergson has shown, a sign is an actual multiplicity, something static. These are derived from the intellect's freezing of the world, its fragmentizing tendencies and its focus on creating actualizations. The signs have particular meanings within actual ideologies, but these meanings are most often not reachable in the archaeological record.

Semiotics focuses on the organization of signs, codes and systems. The traditional "postprocessual" way of using semiotics is to see objects as actively interpreted by human viewers and that objects gain significance when they are interpreted. This significance depends on the experience of the viewers and the contents of objects (Bauer 2002:43). Thus, signs have their existence only as a medium and outcome of communication (Giddens 1984:31). Haraway argues that artefacts and institutions are matrices or signs of larger semiotic-material chains of meaning that are connected to different interests (Eason 2003:178).

A sign is a construction or an act that refers to something other than itself. The sign consists of expression, content and relata. The expression is the visual form, the content is the subjective conception and the relata stands for the relation of the expression to the real reference (Jakobson 1976:23; Sonesson 1992). Peirce differentiates between three signs: *icon*, *index* and *symbol*. An icon is a sign believed to be similar to what it refers to. An index is a sign (such as smoke) which is the

indicator of a referent (fire). Some indexes need a "causal" connection with the referent. A symbol is when a sign and a referent have a link, that is agreed upon, despite possible physical differences (Knappett 2002:102-104). In most cases, things are not symbolic at all. Although icon and symbol have tended to be the most studied signs in archaeology, I intend to focus on Gell's (1998) use of the index.

The signs relate to something other than themselves. Thus, traditional semiotics is a transcendent approach to materiality that relies on a hylomorphic model. However, Deleuze and Guattari (1988:67) argues that the human agent is not a signifier, nor is she signified. The human agent is stratified. Therefore they see semiotics as stratification and territorialization. The index is a territorial sign, the icon is a sign of reterritorialization and the symbol is a sign of deterritorialization (ibid:142, 531). As an index, the causeway is a territorial sign of those who, or what, created it. It coincides with the spatial form itself. The causeway as a symbol is a deterritorialization of its immanent significance. The actualization is given a transcendent significance within an actual ideology. As an iconic sign, the causeway has reterritorialized a virtual ideology (which is directed towards the matter that make up the organs of the "causeway body"). In other words: the causeway resembles other causeways. This is why there is similarity between Aijmer's (2001) iconic codes and what I call a virtual ideology.

Since I do believe that we in most cases cannot know the "meaning" of things in the past, particularly since the actualizations would have had different meanings among the past human agents as well, we should do as both Latour and Gell do and use a semiotics without meaning. Latour has a modified and radicalized semiotic approach to materiality (Ihde and Selinger 2003:5). I will use Gell's conceptualization of index only when one reproduced object can be seen as an index or as a prototype of another object. I do not primarily see objects as indexes of human agency or intentions as Gell (1998) does.

It may be useful to elaborate upon Gell's (1998) reworking of Husserl's retention and protention model, since it relates to actualizations, although this is not the terminology Gell uses. Even though Gell is humanocentric, I shall use him to switch the emphasis to the material. Polyagents manufactured or used by human beings have the traces of the activities of their users that transfer information to other agents although this is partly hidden in the final individuation. According to the rhizomatic principles (Deleuze and Guattari 1988), this reproduction of indexical polyagents is not the *tracing* or pure replication of old forms. It is the *mapping* of new forms, inspired by older forms since a new form never is the same, it has been affected by a rhizomatic network.

Gell's index

Let me begin from where Gell begins. Basically, for Gell the art object is the index of the artist's agency. The material index (the visible, physical, "thing", the actualized entity, the territory) allows a cognitive operation which Gell defines as the abduction of agency. An index is the entity from which a human agent can make a conclusion about both the intention and capability of other human agents (Gell 1998:13-15). The index indicates the way and how certain form of polyagents comes about. By this I mean polyagents that have become "indexed" by human beings. An object is a replica of another object reproduced or used by human beings, but I do not focus on the intentions behind the reproduction here. Gell argues that the "indexes of agency" in the social world create an inter-indexical space-time field, something that he calls *œuvre* (ibid:228). I rather see this field as made up by a network since field implies a total spatial coverage (however, this is not to be confused with the polyagentive network). Some of these indexical polyagents cluster into polyagentive assemblages.

I argue that an *indexical polyagent* is an index of other non-human polyagents. It is the result of a destratification/deterritorialization and reterritorialization of matter. When the limestone block

first is destratified/deterritorialized from the bedrock, it has become symbolic, given an identity by people. When it is manufactured into a block, it is given a trace of human activity that in itself has been affected by earlier indexical polyagents (earlier limestone blocks acting as protoypes to the one under production). This is a reterritorialization, when materiality resembles other materialities (icon). A limestone block is similar to other limestone blocks, they share the same virtual ideology. At the same time, this block is an index of the human agency in Gell's sense. However, once it has become an indexical object, it is once again a territorial sign. It has conquered a new spatial and social territory and relates to wide ranging networks of which the object is an index (the human manufacturer, the bedrock, other indexical polyagents, etc.).

The indexical polyagent may affect other matter as well since there are no absolute boundaries. Take, for example, Sacbe 3 at Yo'okop. It may be seen as an index of its human constructors, but its "effect" on the agriculture at the site could be seen as an index of the actual causeway itself. The soil west of the causeway contains more moisture than on the eastern side. This generates better agricultural conditions, a result created by the causeway. The causeway has created a territory that can be used for agriculture (Johnstone, personal communication 2003; Normark 2004a).

Gell sees the artwork as agency taking a visible form. The consciousness of the human agent is not only found in an object, it has assumed the form of the object. The agent has been transformed into the objects he or she has manufactured (or used). Thus, the consciousness of the agent exists outside the physical form of the human subject, in a multitude of forms (Gell 1998:250). However, Gell also argues that the origin of an artefact is not the artefact itself. We attend to the origins of objects, and we usually reconstruct their sequence of acts which have been performed by other agents in relation to the object. From the perspective of the spectator, the indexes only mediate the personhood of the agent, it does not possess it (ibid:67-68).

It is true that a causeway that a ruler or workers built or used may have been in use years after their deaths. However, it is not the consciousness of the persons living on through the mediation of the index of the causeway. It is just a causeway that affects the present users instead. The causeway may be attributed with the past agents' qualities but those agents are no longer there. Contrary to Gell I see materiality as devoid of the consciousness or personhood of the manufacturer. However, human beings attribute objects with this quality, but that is only from a subjective humanocentric perspective and an actual ideology. A mute monument says nothing of its past associated personhood.

The relationship between prototype and index can be extended to any materiality. The prototype of a causeway is an older causeway or a platform which the manufacturers used as a "model" for the new causeway. The human agents were just catalysts in this process, following singularities in a polyagentive phylum.

3.5.5. The polyagentive œuvre

Style

Style is a principle in which archaeologists unite objects into groups. We classify objects as sharing or not sharing stylistic attributes with other objects. Typology is a way of categorising styles. It is also used to investigate similarities and differences in social activities (Clarke 1978:155). Archaeologists believe that objects that share the same stylistic attributes are related by "shared cultural" values. Usually, archaeologists have treated style as the attributes of objects which are associated with other "cultural" expressions (quasi-objects such as cosmology, kinship, politics, etc.). However, since the polyagentive archaeology seeks a basis in which the human being is no longer in the centre, how do we explain the similarities between indexical polyagents without adding external quasi-objects? This has partly been explained by the indexical polyagents, but style is generally not related to one category of indexical polyagents. A particular depiction of the Central Mexican raingod "Tlaloc"

together with "Talud-tablero" architecture are believed to relate to a "Teotihuacano style" although these materialities are completely different. They are only part of the same style if we maintain the idea of culture areas.

Further, assemblages and phyla crosscut art styles. The "causeway phylum" and the causeway-plaza-pyramid assemblage can also be found in other "cultural areas" as well. Here we cannot rely on a pure "material agency". Objects follow reproductions related to human patterns, but not that of "culture areas" or spheres. This will take us one step closer to the constructed/actualized ontologies in the ontology of virtuality.

To be able to describe "Maya" art style, which cannot be applied to other art styles, Gell argues that we cannot simply detect symmetry and asymmetry in the materiality. We have to focus on the stylistic attributes that tell us that this is "Maya" art, without reference to "cultural patterns" or other quasi-objects. Any indexical polyagent made in a social formation is a representative of the whole corpus, which is like a network where the indexical polyagents are the nodes. This actualized representation is a semiotic relation where the object signifies/territorializes stylistically related objects. However, every piece in the corpus signifies/territorializes all the other objects in the corpus except itself (Gell 1998:163-166). Each object is a microcosm of the whole corpus of a multitude of polyagents, polyagentive assemblages and phyla in an open-ended polyagentive network.

Gell argues that the complete corpus of a painter should be regarded as one object with its parts distributed in several locations. The same can be said for a polyagentive phylum of a population of causeways distributed across the Maya area and beyond. Stylistic perception is the mode humans use to deal with such distributed objects (ibid:167). Gell's distributed object implies the totality of all pieces at a particular time. The style and form of the individual causeways within the phylum differs in degree from a body plan (which it also shares with platforms), but the style crosscuts the culture-historically defined "cultural" barriers (explained below).

Gell's (1998:218) *principle of least difference* is when one form has a minimum of modification compared to neighbouring forms, but enough to make a distinction between them (a difference of degree of the same population). Parts are related to wholes by the same "principle". This "principle" is a virtual tendency that is not to be found in a specific object, only when actualizations are juxtaposed, following a created genealogical series within a polyagentive phylum. Objects gain similar forms as other objects within a social formation due to the replication of indexical polyagents.

Indexical polyagents are found at the actualized points of origin and termination of transacted virtuality, meaning that they are both index and prototype at different stages of their existence (ibid:36-38). The style and form of a vessel, a stela, a causeway, etc., will act as prototypes for other polyagents of the same polyagentive phylum and assemblage or maybe for other phyla and assemblages as well. There is always a "leakage" between the phyla that has unexpected outcomes. Therefore, these later polyagents will be indexes of earlier polyagents.

A style can be seen as belonging to the same nodes of one or several actual ideologies. Style does not relate to "ethnicity", and it cannot be used to define human populations since style flows across actual ideologies, phyla and assemblages. It is rhizomatic and thus nomadic. A style has no absolute boundary and it may also be determined by the workings of local virtual ideologies.

A polyagentive œuvre

Let me recall figure 18 where the objects are seen as disconnected from the human agents, where the actions are beyond the spatialized archaeological event horizon. No course ties them together as in figure 20. How can we merge these points in spatialized time and space without giving precedence to the human being?

Let me make a hypothetical case in which we were able to find traces of all activities one single

human agent was able to participate in during his or her life in the Maya area. We would probably find traces of chert knapping, farming, trade items, house construction, food processing and water collecting. These activities would be distributed at various places and would have occurred during various sequences in spatialized time. Some chert knapping areas would include more data than other chert knapping sites depending on when and where we focus the study of our imaginary agent. Even though the activities may have been "routinized", they were done at intervals, and the agent did something else in between.

Our human agent was not bound by spatio-temporal coordinates of the body (Houston, et al. 2006). Gell (1998) refers to Strathern (1988) who argues that "Melanesians" see objects as detached, multiple and being distributed parts of people circulating within a social body. A person and his or her agency are considered to be composed of all the objects (indexical polyagents) they made and used. Although, this is clearly an ethnographic and humanocentric analogy, we can see indexical polyagents in a similar way in all social formations, as the example does not need to be filled with "cultural meaning". It is only a semiotic relation.

In short, the human agent consists of distributed events, memories of events, and indexical polyagents which are attributed to a physical person. A person is the sum of all indexes that this person has created. Knappett (2006:243) argues that there is no real boundary for how far the self can be distributed. For example, Haraway (1995) sees herself as an extended cyborg/self that consists of both human and non-human parts. Cyborg theory sees no rigid boundary between the human and the machine. Technology is just an extension of the human body. This definition of a person may also continue after the biological death. Upon death, a person's agency is widely dispersed. Indexes of his or her agency are to be found in many places. The indexes are not concentrated in one particular setting (Gell 1998:222-225). In short; the person is the sum of indexes of polyagents in life (an œuvre). Ancestral shrines, tombs, palaces, stelae, causeways, etc., were all examples of this distributed personhood of an ajaw and those other agents who helped him or her to construct, use and maintain them. For example, there are textual traces that the deceased Janaab' Pakal of Palenque continued to own a building which later rulers used as their throne room (Stuart 1998:378).

Therefore, an agent's œuvre consists of a series of works which may have been produced at different places. These œuvres can also be dated and they can be arranged in a sequence. After the agent's death, when the œuvre is complete, it represents a space-time unit which can be reached via each individual piece of artwork or artefact. Each of them stands for all of them (Gell 1998:232).

Gell (1998:241) argues that the events in Husserl's retention-protention model can be replaced by actualized objects as part of an agent's œuvre(s). However, Gell's hylomorphic use of Husserl reflects an idea that the œuvre is not made out of a continuous duration from a humanocentric perspective, but rather discontinuous instants, represented by indexical polyagents.

From the materiality surrounding the past human agent, a false duration can be reached by merging the actualized polyagents as Gell suggests (figure 25). This is similar to a typological method where objects are strung along a time line. The imagined typological sequences do not reflect true duration, only actualizations. However, we use them to create a false duration and fill them with quasi-objects. As with biographical approaches, Gell's model has human agency or culture as a substrate, his own metaphysics of presence, upon which the stylistic forms change. To me, this human agency might as well be removed; polyagency can take its place. The artefacts make an agent generate other artefacts. This can be said without filling the voids between the distributed polyagents with quasi-objects. True, a human being is needed for the reproduction of materialities, but he or she is not in the centre anymore, as he or she acts as a catalyst and only reproduces artefact forms, driven by a polyagentive phylum.

From Gell's perspective, what we have in our hypothetical archaeological record is then the agent's œuvre(s) of several indexical polyagents. The human agent would pass in and out of several

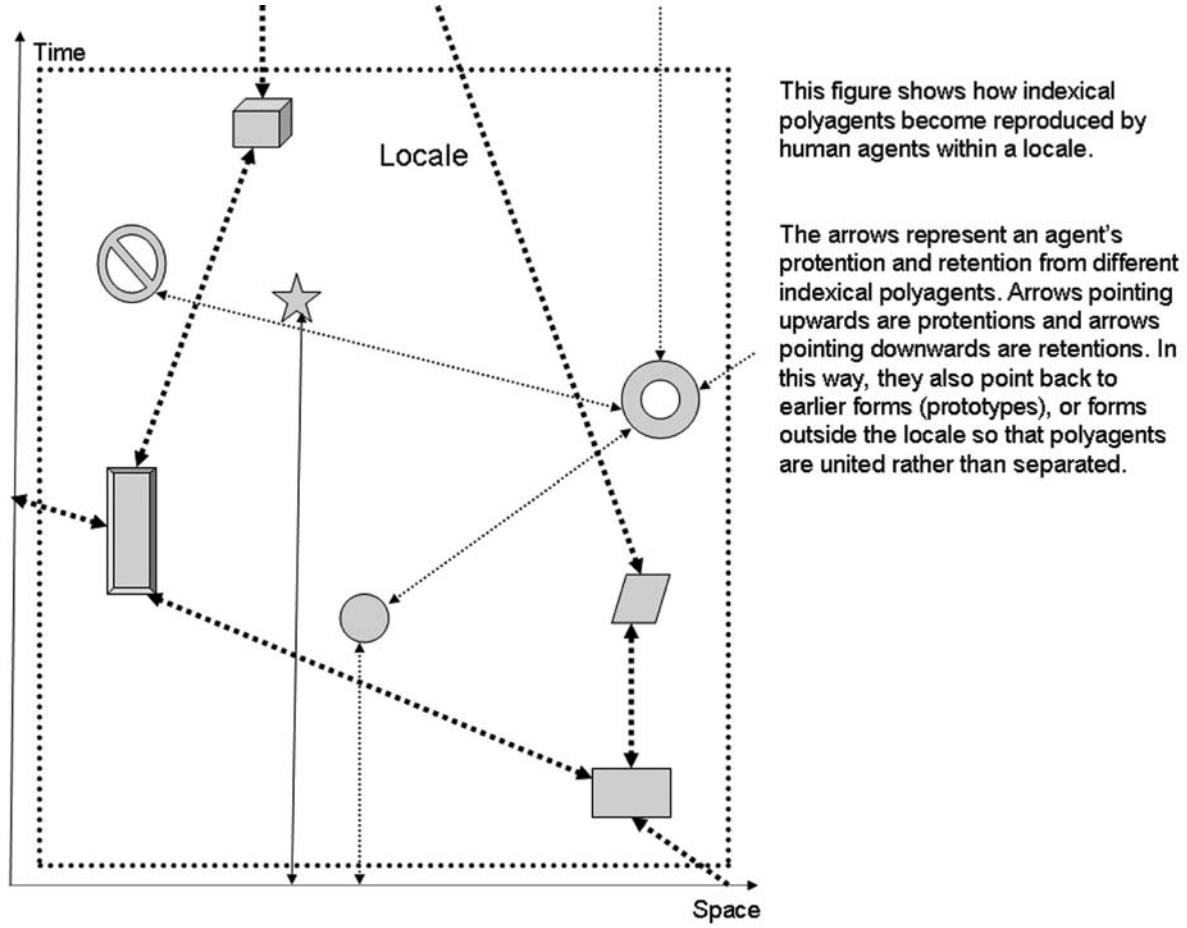


Figure 25. Protention and retention of the archaeological objects.

polyagentive phyla and assemblages, join a series with other people, leave a mark, actualize things, etc. All these events would make up one agent's œuvre, the total production of materialities through life. However, as mentioned before, each object is not only the index of the agent's agency, it is at the same time the index of other actualizations of past objects, and the indexes of indexes those objects contain in an actualized series of polyagents. The indexical polyagents contain the virtual seed for the actualizations of future polyagents. Thus, a potter manufactured or actualized a vessel by copying what others had done before him or her. The prototype for the new vessel was, when it was manufactured, the index of another actualized polyagent. Each time an object was produced, it may have been a task for future objects as yet unactualized. As a consequence, the virtualities of the objects were not bound by their spatial and temporal limits. They worked as indexes and prototypes of other polyagents. Just as Knappett (2006) argues for the human being, the polyagency of an object has no true temporal or spatial limit.

Knappett also suggests that things are not just distributed in networks, but also accumulates. This is linked to layering that occurs when an object is repaired or adapted during its life history. Layering and networking takes place at each location, like when things spread in space by a human agent who leaves and accumulates objects at certain places (Knappett 2006:240-248).

I extend the concept of œuvre to all material productions and uses throughout the existence of certain indexical polyagents, phyla and assemblages at a locale. This *polyagentive œuvre* refers to indexical polyagents of various sorts, either defined from an emic or etic perspective (causeway, chert axe, house, stela, etc. would together form a total œuvre of individuations of a particular site or locale). The individuations within the œuvre do not directly follow the polyagentive phyla since the phylum is directed toward matter and the œuvre is directed toward form and style. Thus, the form or stylistic designs of a stela could potentially affect the design of a pyramid although

they belong to different phyla. The œuvre only focuses on form and style within actual ideologies that spread in polyagentive networks. A polyagentive œuvre is the closest one can get to a local "culture", but it is open-ended and has no spatial and temporal limits other than the one the researcher decides (the locale). The œuvre can relate to the œuvre on a local or on a regional level, since they are nested in each others.

The polyagentive œuvre is the total amount of indexical polyagents at a locale, and the polyagentive network is the relationship between these and other polyagents from the view point of a specific phylum (a causeway networking to other polyagents). One difference between the œuvre and the phylum is that the phylum focuses on how populations of indexical polyagents that are part of the same technological lineage are reproduced. Œuvre is the total amount of phyla of indexical polyagents that exist at one time (including discarded objects), since they are either indexes of something no longer in use or prototypes for something in use.

3.6. Virtual and actual ideologies

What we have now is an outline of how I see the transformation of the virtual into the actual and how materialities are reproduced in a basic way, the same way in Sweden and in Mexico, in the past and in the present. This has been the *ontology* of ontologies that is based in Deleuzian realism. We need to see how the other *ontologies* are formed, how they are constructed. The discursive and the iconic orders relate to the workings of the actual, although the iconic codes share similarities with the virtual ideology. There is a need to reintroduce the human being again, to go beyond the event horizon. This gives me reason to return to Bergson in order to develop what I call virtual and actual ideologies. What is ideology?

3.6.1. The ideological problem

The concept of ideology was invented by Antoine Destutt de Tracy during the Enlightenment. It stood then for the science of ideas. Marx later argued that society is shaped by production, the transformation of nature into the material objects human beings desire. Production relationships were believed to be masked, and ideology came to stand for the rationalizations of why such differences in power come about. Ideology was likened to religion in that it was believed to mystify the real capacity of human beings. This arose as a contradiction within a class society (Wolf 1999:25, 31). The Mayanists use the term ideology in a similar way.

Ideology can be seen as both a necessary and a positive force as well as legitimating repression. The former creates subjects, the other subjugates them (Shanks and Tilley 1987:74-75). For Wolf, ideology is a unified scheme or configuration to manifest power (Wolf 1999:4). Giddens (1979:72) rejects theories that tend to emphasize the importance of ideologies upon less knowledgeable agents. Thus, he is less concerned with conflicts than with stability and shared knowledge. However, for me there is never a stable social formation, so ideology forms an important stabilizing factor in unstable and ever changing relations. Ideology can tell us why there appears to be a continuity of iconography, architecture, and so on within an area. The main obstacle for my use is that ideology has been seen as an external transcendent quasi-object.

To see how ideology is manifest internally, Žižek may help us out. His concept of ideology is largely based on Lacan's psychoanalysis. Žižek believes that the rules of a discourse do not come from superstructures but are the remains from the individual's constitutional processes. We can never have a total control of our own reality, although there may be a core which is similar to what other people have. This information is not understood by everyone since it is treated differently by different subjects. However, the subject is seldom the same since it acts according to certain subjectifying positions. The social interaction is a play of misunderstandings and non-awareness. We believe that we know what we are doing. This collective illusion is called ideology by Žižek

(1989). It is not a false consciousness but rather a social reality whose existence assumes the agents' lack of knowledge about the essence of ideology. If we understand too much of the ideology, we will have problems in the social play (Fahlander 2003).

The individual is only a subject as long as he or she assumes the social substance, which is in opposition to him or her and makes the subject subordinated (Žižek 1989). The discourse that determines the contemporary constitution of the symbolic order tries to merge the real into the symbolic and define and organize the elements which are subjectifying. Human beings need a language and an interpretation to make the world understandable. This interpretation can never explain everything and it is always subject for variations. To create a mutual agreement we therefore need an ideology (Fahlander 2003:24-26). Žižek's nodal points are those around which ideology struggles (ibid:43-44). People need to believe this ideology is shared, to be able to get along with others.

This process begins when one is born. However, the information that is acquired before the infant can speak must function in different ways than language, and will also continue during the rest of life. This information is not possible to utter in words since it is not language based. Aijmer (2001) argues that this unspeakable comes down to us as iconic codes and is connected to our perceived world and memories. However, these iconic codes relate to signs as do language, and are thus representations, formed by our intellect (Bergson 1998). Language, symbols, and other signs are only representations and actualizations; static and artificial. These cannot be used to understand the changing processes. Ideology has a deeper part than language and iconic codes. Ideology also comes from the virtual.

3.6.2. Towards a virtual ideology

In order to develop the connection between materialities and human beings without setting the human in the centre, we need to summarize what has been said in Section 3. From my reading of Bergsonian philosophy and the reworkings of some of his standpoints by others, we can see that:

- The world is changing, but we cannot understand the changing process. Our intellect freezes and fragmentizes the process into static entities and solids, and makes them into differences of degree that relate to space and perceptions.
- We use these solids to form our idea of the whole, but what we perceive are only fragmented static entities separated by space, not by duration. Thus, we will not reach an understanding of the virtual totality by using our intellect.
- Memory comes out as perception, meaning that memories drive us to perceive, everything that would be new in an encounter is interpreted into what we know. The Other is transformed into the Same. Therefore, we tend to classify the unknown from the known.
- The virtual continues to exist beyond its actualizations. It becomes and actualizes into polyagents. These polyagents are externalized and made into spatial extensions by our mind. As such, they are static and can be expressed in language or symbols. However, these are not continuous and therefore leave an imagined void that is filled with ontologically secure and transcendent quasi-objects from which the social world is constructed. These cannot be used to understand the virtual, changes and life. However, the actualizations become nodes for various interpretations anchored in our habits.

Human beings share and are part of the virtual and the immanent, but we try to explain the world from the actualizations (symbols, languages, materialities) to generate a totality. The external quasi-objects; ideologies/cosmologies discussed by most Mayanists are therefore formed around actualizations. Due to the workings of our intellect, these ideological models seek the totality from the outside, from the macro-level, from transcendent structures and quasi-objects that we think

embrace all fragments. Since these are believed to be static, they generate a security and stability in a changing world. The intellect creates and seeks this stability to be able to work, calculate, communicate, etc. We also think we share this ideology with others since we have spatialized and externalized it to a quasi-object that is believed to exist beyond us, that there is a higher and transcendental order to which we are subjected and which we need to internalize through socialization processes.

Therefore, Mayanist researchers use symbols, pyramids, caves and causeways as nodes in establishing a non-complete cosmological or economic model. Once we try to explain them together, the models appear as different actualizations, actualizations that may generate conflicts as they may not coincide with others researchers' views of the same actualizations. The imagined voids are filled with different quasi-objects depending on ones preference or suppositions. Causeways are either seen as functional or as symbolic by researchers and as umbilical cords by some past people. Few people acknowledge that these perspectives are just fragments.

The actual ideology and the arbolic macro-ideology

An *actual ideology* is usually the same as habit. It is formed by the experiences of the human agent. If some actualizations/polyagents and polyagentive phyla are more persistent and similarly understood among a wider populace, these could be formed into nodes of an *actual macro-ideology*. Thus, the actual ideology can be everything from individual habits to a macro-ideology. It only differs in degree since it focuses on actualizations, fixed entities. There is no absolute boundary between these different levels. However, an actual macro-ideology would quickly become *arbolic*. Arbolic thought believes in vertical and totalizing principles and dualism. The arbolic thought resembles the genealogy tree in which there is a unidirectional progress where everything splits up in binary lines, everything become a difference of degrees. Arbolic thought is linear, hierarchic, sedentary, segmented and striated. It branches off and subdivide into smaller categories. This thought is static and is what forms an actual macro-ideology, such as science and religion. It sees itself as the "roots" of the "tree", and the individual thoughts by people are seen as the leaves that are dependent and subdued to the nourishing and stabilizing roots. They are part of the same, only a difference of degree exists between the arbolic structure and individual habits. Arbolic thought gives rise to hierarchical social formations (Deleuze and Guattari 1988).

The creation of actualized/external ideological elements is a need to form a totality out of discontinuous actualizations. It will never completely succeed. The solids and static entities will not generate the totality, and thus leave it open for various interpretations and representations that our intellect contemplates upon. What we really share, the virtual memory of what is becoming and changing, is neglected and will generate misunderstandings. Differences in understanding the actualizations exist; but these differences are merged into a collectively known quasi-object by different interests of power. The gap between the collectively known quasi-object and the individual habit is up for negotiation and creates various social constructions.

In short, it is from the actualizations that the social is constructed. There is also a tendency to manoeuvre, to gain power, by emphasizing certain aspects of actual macro-ideologies and by reproducing some polyagentive phyla, assemblages and œuvres. Therefore, some social constructions come to dominate. It is also the way in which different ontologies of the world are created by researchers. These ontologies (realist, iconic and discursive as Aijmer (2001) defines them) are non-complete statements of the world. Taken together they would still not come near the undivided flux of the world.

The virtual continues even though it diverges along different tendencies. Continuity and differentiation exists in the virtual, but we seek this continuity in something that does not bear continuity. The differences that exist between competing arbolic macro-ideologies are the result of different approaches to the becomings of actual multiplicities from a virtual totality. This is why there

are similarities between a typical quadripartite worldview in the contemporary town of Ichmul and in Late Formative Cerros despite great social upheavals in between, such as the Spanish conquest. The virtual has been continuous, generating certain actualizations that look the same as others, as these have followed polyagentive phyla and are indexes of earlier actualizations. However, the actualizations of the virtual have diverged, forming new sets of ideologies with different meanings, but sometimes with similar representations that have a material correlate. These material correlates have a multitude of interpretations and need not be the same from the Late Formative to today. For example, the importance of the cave is partly due to its material persistence that relate it to the virtual ideology, rather than a static actual macro-ideology. To use Aijmer's terminology, the cave is iconic since the iconic codes are closer to the virtual than the other actual ideologies.

Iconographic, epigraphic and archaeological remains should perhaps be treated as differences in kind, they do not necessarily tell the same "macro-ideology" or "macro-narrative". The BIH hieroglyph need not relate to the same actualization as the causeway itself. However, researchers see them as differences of degree and generate a homogenous arbolic macro-ideology from this. Macro-level models on ideology, such as the *may*-cycle or the quadripartite model, assume from disparate data, that have been patched together to fill in "voids", that they are long-term externalised structures. Thus, umbilical cords and causeways are believed to belong to each other in an external actual macro-ideology. Researchers have put them together since some representations in some different contexts suggest this. But is it so in all contexts? Our own intellect tricks us since the intellect strives to unify diverse phenomena (Bergson 1998:152).

Rather than trying to create an ideological/cosmological model that explains all separate actual multiplicities, as seen in material remains, we should start from what they share. This is not in an outer (spatialized) shared actual ideology, it is within the virtual. Whereas the actual ideology focuses on forms/styles and attributes them with transcendental explanations, the *virtual ideology* focuses on matter and what is immanent. As mentioned before, Bergson uses the *image* to disregard the idea that matter has the power to produce representations in us. Therefore, matter is not different from the representations we have of it. Bergson claims that we do perceive the things where they are. Our perception coincides with matter. There is only a difference of degree between perception of matter and matter itself (Deleuze 1991a:25). The virtual ideology reveals tendencies of matter and transforms nodes for more static and widely spread actual ideological elements. The virtual ideology is local, changing, and it is directed towards action. It also resembles Aijmer's (2001) iconic order (but it is not the same). Both are located in the very objects themselves and manifest intuitive cognizance, but the virtual ideology is more fluid. The iconic order shares similarities with what Bergson calls intuition, or the intellect's attempt in trying to understand the virtual. Matter, form and style merges in a non-discursive way.

The rhizome and the nomadic thought

In between the extremes of an arbolic/actual macro-ideology and the virtual ideology there were people with different habits/actual ideologies. These were partly affected by the dominating arbolic ideology, but there were thoughts and processes that acted in a rhizomatic way. A rhizome is horizontal, non-hierarchical and can link with things that are different in kind. It has multiple entries and exits. Rhizomatic thought is non-linear, anarchic and nomadic. It cuts through the vertical hierarchies and order, which have been set up by arbolic macro-ideologies. This thought moves in multiple directions and is linked to other lines of thinking. It deterritorializes arbolic ways of being by interacting with the virtual ideology and other actual ideologies not embraced by the arbolic macro-ideology. It is a network and therefore it crosses borders. It creates links between nodes that are separated by arbolic structures (Deleuze and Guattari 1988:7).

There are some rhizomatic principles: (1) there is connection between multiplicities; (2) these multiplicities are heterogeneous; (3) there is a multiplicity of lines and connections (it lacks

central points or positions); (4) a asignifying rupture means that a rhizome can be broken but it will start again on one of its old lines or create a new one. The flow is rerouted around disruptions. Two other principles are; (5) cartography and (6) decalcomania. The rhizome is a map rather than a tracing. Maps are open and connect in any dimension and are constantly modified whereas tracing only replicates existing structures. The map experiments and adapt in networks that expand and shrink (Deleuze and Guattari 1988:9-12).

In the intersection between the actual and virtual ideologies, continuity in arbolic/actual macro-ideology is only illusionary. For example, the location of the 19th century Black Christ church in Ichmul is on the same spot as where the 9th century triadic causeways would have converged if they continued all the way into Ichmul. This place is therefore of great concern (Flores and Normark 2005a). It is not likely that an arbolic macro-ideology would have remained at the site for 1000 years. It is far more likely that the continuity is located in the virtual ideology related to the location which probably was a funnel shaped cenote or a cave. In-between the virtual and the actual ideology was and is a rhizomatic network of materialities and thought. Therefore, this material feature acts as a node of a decentralized rhizome that connects heterogeneous elements. Although the settlement was ruptured at the site, at the end of the Terminal Classic, the feature remained and the ruptured rhizome related to this feature was picked up by the Catholic priests, incorporated it into "their" network and in this way the Black Christ "cult" could expand. Once this actual ideology became established, it became arbolic and other actual ideologies in the rhizome found other ways.

Of major interest here is that rhizomatic thought is *nomadic* and opposed to the arbolic macro-ideology that tries to constrain the rhizome into an arbolic structure and arbolic institutions. The actual macro-ideology exercise its power through "state machines" and the nomadic thought (other actual ideologies that are non-institutionalized) fight or mock the arbolic structures through other "war machines", through the rhizomatics (Best and Douglas 1991:102). The nomadic thought is being colonized by the arbolic thought that operate in closed systems that consist of categories, classifications and types (Massumi 1992:6). One way to oppose the arbolic macro-ideology is to do what Bhabha (2004; Fahlander 2007) terms "mocking mimicry". It is basically the mimicking of what the arbolic ideology maintains in materialities, but it does not mean that those who mimicks have embraced the significance of the arbolic ideology. They may have filled the mimicked entity with a nomadic seed, ready to grow when the arbolic ideology eventually disappeared. An indexical polyagent similar to other indexical polyagents may therefore have different meaning since it could be the result of mocking mimicry. This is a "passive resistence" which makes it difficult for the archaeologist to create or re-create any ethnic identities, social and political structures of the past by focusing on artefact and architectural styles since these could actually reflect rejection of the arbolic order, not a sharing.

Deleuze and Guattari (1988) sees the nomadic thought as occupying a *smooth space*. This is a turbulant space where heterogeneity is distributed in an open manner. This space has not been "disciplined". Arbolic thought relies on a *striated space* where everything is arranged in closed systems (socially and physically). Striation occurs when technology reorders the space and makes it measurable. Thus, a causeway is a kind of striation of a space that once could be transversed by trails in a smooth space. However, these two forms of space only exist in mixture.

The nomadic and the arbolic thought are not dialectic opposites. The arbolic thought creates hierarchies and structures, but this tendency is prevented by nomadic thought that moves around and affects different nodes of the arbolic structure. If the nomadic thought has gained access to the interpretation of certain nodes and therefore has to confront the arbolic structure in a direct confrontation, it will become arbolic itself, in order to maintain its obtained power. Then it works in the way discourses are formed in Foucault's writings.

The genealogy of actual ideologies

The polyagentive phylum in combination with Gell's index can explain the way technological lineages emerge within social formations. What is the equivalent of how actual ideologies, ranging from nomadic thought to arbolic macro-ideologies, emerge and change?

The genealogical method, as developed by Nietzsche and Foucault, studies what kind of structures, practices, institutions or ideas that persist over time. This is clearly in line with Turner's (1994) quasi-objects. However, if we see the actualizations from the virtual as forming a rhizomatic network instead, which is formed around and from material objects, such as causeways (a polyagentive phylum, part of an assemblage and an œuvre), it may be possible to see how the causeways, as important nodes for actual ideologies (both arbolic and nomadic), have affected the actualizations of other materialities. In other words, how have causeways as polyagents and actual ideologies affected other polyagents in a network?

Although the rhizome does not rely on the genealogical model (which is arbolic or tree like), it is important to note that in order to minimize a study, it may be useful to focus on a constructed genealogy that follows one material category to which other materialities can be connected in a rhizomatic way (without turning it into an arbolic model).

Genealogy is a way to locate the emergence of entities, an account and a focus on discontinuity of actual ideologies rather than progression (Foucault 1984). The genealogist studies the components of an element and follows these. They do not study the claimed nature of actualizations but rather focus on the virtual kinship between them and the powers and actual ideologies that interpret, construct or reconstruct the actualizations (Beronius 1991:49-54). Important here is that Foucault argues that there are no natural categories, and everything is socially constructed (from the actualizations I may add). The human interaction with the world is partly made up by an actualized semiotic system, particularly the language and the iconic codes. All intellectual knowledge is found within the artificial symbolic order and intuitive knowledge relies on the virtual ideology and partly on iconic codes. Our perspectives concerning the actualizations give and create meaning. The language is problematic and can therefore not give an unproblematic answer. The words only form a meaning in relation to each other, within an actual ideology/*discourse* (Beronius 1991).

According to Foucault, a discourse is the power human beings try to gain to be able to control others. This transforms a discourse into an arbolic structure. The discourse is the interaction between the material and the symbolic, between actualizations that produce subjectivity (Braidotti 1991:38). Every actual ideology is to be defined specifically without claiming continuity with another discourse, the continuity lies in the virtual which is non-discursive. Here the virtual acts as an intermediator between one arbolic structure and another arbolic structure that may have been interrupted by nomadic thought. One of the rhizomatic lines that once was nomadic thought may turn into an arbolic structure in itself.

This is obviously not the way the "Maya ideology" has been described. Here the emphasis has been on a total, fairly static, and continuous macro-narrative, such as Rice's (2004) recent use of a direct historical analogy. It is therefore important to emphasize that encounters often lead to discontinuity in actual discursive production. However, as should be apparent now, it is not Foucault's idea of persistent practices that will affect the production of changing discourses. It is the actualizations that always are differentiated, the virtual ideology remains undivided. Further, Foucault wishes to demystify the "author" (the producer of discourse) by emphasizing the discursive production. To this I agree. There is seldom an author since the virtual lacks identity, a single unit or author to fall back upon. There are examples, such as Newton, Darwin and Einstein who have made notable differences in history, but these are likely the exceptions that support the rule.

Power

The strength of the actual/arbolic macro-ideology comes from connecting the actualizations of

the virtual, and to convince others this is the totality by claiming to know how to fill in the "voids". This must also be convincing for other people's habits. However, can we say that if we could set us into the duration, by Bergson's intuitive method, and try to gain knowledge of the virtual which we all share, would actual ideologies/discourses and differences between people's opinions disappear? No, we would still have power relationships. Like Nietzsche argues, the human being and the world have wills to power, to exceed their barriers. It does not settle in equilibrium (Grosz 2004). This will to power is the virtual that generates becomings that break away from its own actualizations. There is nothing stable in the virtual and the actual macro-ideology is created in order to stabilize and maintain power, both over the actualizations and over human beings. However, power itself is fluid, mobile, dispersed and nomadic. It has no borders.

The nature of power is seldom discussed in Mayanist literature. They treat power from hierarchy, a top-down perspective, often entrenched in a macro-ideology (Demarest 2000; Freidel, et al. 1993). Most Mayanists see power from a materialist view in which power is manipulated, but not generated. It is pre-existing in political and socioeconomic relationships and its true nature is masked by cosmology (Johnston and Gonlin 1998:148). There is an idea that constraints of power come from the power of external transcendental structural properties that cannot be changed by the agent. This trend can be found in Marx who focused on the dialectic relationship between human agents and materiality. For him, labour alters the world and human relationships, since people are forced into subordinate relationships, which reduce the possibility of personal and social growth (Gosden 1994:69).

Time and space are the foundations of the context of social interaction. Agents or groups try to control those who cannot be present at certain types of social interactions. By controlling who interacts with whom, and when this takes place, groups can regulate who has access to resources and information associated with different types of social interaction (Giddens 1981, 1985). The causeways could potentially be seen as such structuring features.

Power is not intrinsically founded in sectional interests, such as those generally attributed by Mayanists who claim rulers or elites legitimized their power through ideology. If power has no "connection with the realization of sectional interests, neither does it have any with the realization of collective interests or 'goals'." (Giddens 1984:257). This notion is interesting if we relate it to Giddens definition of ideology. He sees ideology as the ability of a dominant group to transform their own interests into a universal appearance for others (Giddens 1979:6). Thus, power and ideology is not necessarily related. What is the connection according to Foucault?

Foucault defines power as a complex strategic situation in a social formation (Braidotti 1991:79). This power partially comes from the arbolic ideology which automatically leads to exclusion. However, power does not exist other than in relation to other powers, so there is no reason in trying to localize power to certain agents or their causes. Power does not come from one point to embrace everything, but from all points in a social formation (Foucault 1979), like a rhizome. A struggle is always impure as it is bound up with what it struggles against, which is reaffirmed by this struggle (Grosz 1995:62). This is what occurs between nomadic and arbolic thought.

Foucault has shown how a supervising and regulating arbolic power deals with unpredictability, eruptions of events and the realignments of power that always takes place through the workings of rhizomes. Power could be seen as a way to link invention and newness to what is already known and contained from certain actual ideologies (Grosz 1999b:16). If power is to be coercive and constraining, it must first establish relations that are productive, enabling and positive (Grosz 2001:102). Thus, what is new among actualizations from the virtual, can be directed by certain interests. Only a local approach can find those interests, by seeing how one polyagentive phylum has expanded, territorialized, on the expense of other phyla, or maybe linking different phyla and assemblages to create new actual ideologies. Even if the actual ideology fits the known, there is

always the potential of the virtual to erupt unexpected changes by nomadic thought.

The meaning of a polyagent in an actual macro-ideology is dependent on the power of those who claim the interpretative dominance. The importance of the polyagent is impossible to asess if we do not understand the once nomadic power that has gained access to the polyagent and formed the actual macro-ideologies that spread through the polyagentive networks and turned it into an arbolic structure. Therefore, it is important too look for such traces in different contexts and not include them in the arbolic macro-models such as "Maya cosmology", that is based on iconography and epigraphical interpretations that are believed to reflect a coherent narrative. For example, Hammarstrand (2007) shows a significant discrepancy between Buddhist texts and actual archaeological evidence. It is by linking epigraphical and iconographic data with archaeological data in a rhizomatic way that interesting patterns may be reached. Otherwise, we only reach an arbolic and static reified view of the past.

People become subjectified according to particular actual macro-ideologies which partly form the way they perceive the world and themselves, although this puts a veil over the virtual that is true duration. Foucault sees history as a movement of one dominating discourse to another, like between different sets of actual macro-ideologies. A power cannot have an interpretative advantage over a polyagent if it already is in power by another actual macro-ideology. Only the nomadic power that can relate to the arbolic power currently in control of a polyagentive network can become successors by spreading its actual ideology to every node. A power must therefore first borrow the actualized patterns they fight against, to be able to succeed since everything is already interpreted (Beronius 1991:55-58). This it can do by actualizing that which has not been actualized from the virtual. This could sometimes be quite drastic and break with previous powers. Such a break would be like Kuhn's (1996) paradigm shifts or even more radical, like the "truth-events" in Badiou's terminology (Cornell 2007). In short, nomadic thought must quickly turn into an arbolic ideology itself in order to deterritorialize the dominant arbolic ideology.

3.6.3. The nested polyagentive network

People deal with specific actualizations. Causeways were used, maintained and changed by different series of people, groups and institutions. But changes take place in the virtual, continue in the virtual, only to become and differentiate into actualized patterns that we recognise. How can the virtual tendencies of the causeway be merged with actualized encounters, when past agents interacted with the actualizations they perceived?

The polyagentive network

In order to better understand how nomadic actual ideologies and their associated power spread through polyagentive assemblages, phyla and œuvres it might be useful to look into the Actor-Network-Theory (ANT) (Law 1999). The components in an object interacts with other objects, becoming part of a network that works and affects in ways independent from the original intention (Stiegler 1998:75). A network has a rhizomatic character and is made up by nodes (actualizations) and links. There is a difference between the network and the assemblages, the phyla and the œuvres. A polyagentive assemblage is seen as a constellation of physically connected "individuals" from various polyagentive phyla, such as the causeway-plaza-pyramid. A polyagentive œuvre only consists of indexical polyagents. The *polyagentive network* does not just consist of indexical polyagents. It consists of all polyagents and they need not be physically connected. However, assemblages and phyla can spread through a network by the means of a human catalyst.

ANT consists of quasi-objects, quasi-subjects and hybrids (Bruun Jensen 2003b:228). Thus, I replace the actant and actor with polyagents in the following description since I do not see the polyagents as quasi-objects. Contrary to the ANT, the polyagentive network is a pure physical network in which polyagents act as nodes. The polyagentive network can become complex, so it

works best if one phylum (the causeway in this text) is followed and is related to other phyla and assemblages. A network can be seen as a movement of a polyagent when it becomes associated with other polyagents.

In the polyagentive network, the polyagent deviates from arbolic control. It is out of control from an actualized perspective since the virtual and nomadic tendencies make the network unstable. This is an involution of associations between heterogeneous elements. There is no essence in this process, just a series of negotiations between heterogeneous polyagents (ibid:227). In the network, each polyagent is a mediator and not a manageable intermediary. Certain nomadic powers are networking heterogeneous polyagents and redefine and transform their contents. These networks are often connected to polyagents that contain references to the same or similar actual ideologies that can be turned into arbolic ideologies (Callon 1991; Latour 1987).

Materiality is sometimes immobile and "long lived". It affects the network in a different way than the human beings (Knappett 2006:243). The polyagentive network in itself indicates that important resources are concentrated in a few physical places. Some assemblages or phyla are more central for the actual macro-ideologies since they are used to striate social and physical space. These are the nodes that are connected with other polyagents in both a striated space and a rhizomatic network. These connections transform the resources into a network which can extend everywhere (Latour 1987:180), although striation tries to set boundaries for the network. The arbolic ideology and its striated space often comes in conflict with the nomadic thoughts within a rhizomatic network. The polyagentive networks also translate people's perceptions, skills or technology into certain actual ideologies (Callon 1995:50). People find allies to support their own versions of actual ideologies in the network (Latour 1987:108-132). This is the process when the nomadic thought becomes arbolic. It occurs when one has gained enough supporters to suppress other actual ideologies. Thus, an actual macro-ideology undergoes a series of transformations or translations by people and the virtualities immanent in the network (Latour, et al. 1992:34).

A network is the extent of either one polyagent or an entity made up by polyagentive assemblages (such as the entire causeway system of Ichmul). These are of different scale, nested in each other. The whole locale of Ichmul forms a network in the same way as the single causeway or an assemblage does. A researcher needs to define the extent of the network since it is rhizomatic and can extend anywhere and it can connect with heterogeneous elements and there is no absolute centre of the network. A striated space tries to create such centres and limit the extent of the network, but the true nature of the network is the rhizome.

Nested networks

Deleuze sees the world as consisting of actualizations that are nested within one and another. These have been produced by individuation processes from the virtual (DeLanda 2000a:9). Smaller entities are nested in larger ones, and they all lack eternal essences or abstract categories. Therefore, one must trace the historical origin of these wholes (DeLanda 2000b:4). This also means that the local polyagents (single actualizations), phyla (polyagentive lineages), assemblages (physically connected constellations of polyagents), œuvre (distributed indexical polyagents), and the network (indexical and non-indexical polyagents not necessarily physically connected) affect each other since virtualities cross all boundaries and they are nested in each other. The human catalyst can here be seen as a conveyor of virtualities.

The relation between the individual network and the individual polyagents is equivalent to the relation between the whole and the parts. This relation is "causal" in the sense that the whole emerges from the parts. The whole has the same ontological status as the parts, being individual entities, but it works on a grander scale (ibid:2).

In the top-down (arbolic) perspective that most archaeologists are accustomed to, one is easily tempted to see social formations as developing through stages or consisting of predefined

levels. In DeLanda's approach, each level of scale has its own history of individuation process (ibid:6). His ontology of individual entities specifies the historical processes that have created the whole. He sees institutions and site centres as concrete social individuals. A social individual must maintain an identity through time even though entities of different scales intervene (ibid:5). In such a perspective, the arbolic institution(s) of a may cycle could possibly remain intact although other series, entities, institutions and nomadic thought intervened. Thus, the nested polyagentive network is the polyagentive attempt to explain changes across a greater spatial area without falling back on transcendental quasi-objects.

3.6.4. Investigating empirical data without predefined social categories

What has been presented in Section 3 is not a model, but tools to use while navigating between the materialities found in the archaeological record and to search for patterns without using predefined transcendent quasi-objects.

I have not suggested that the models described in Section 2 are wrong. However, I have several problems with models that describe the past from static and predefined categories. This problem ranges from models on world systems to models on past subjectivity. World systems and subjectivities are not apparent in the single objects. We need to settle somewhere in-between these extremes. The local setting is the best place and scale for most research. The empirical data from such a locale needs to analyzed from the local context first. However, it is quite common in Mayanist studies to immediately fit a stela into a cosmogram or the workings of superpowers. On the local scale, this stela had substantial linkages that will be lost in such transcendent approaches. The "Big picture" just gives us a very general pattern which never was of any concern for the single "commoner". The kings and their life, which seems to create an endless string of publications on who fought who, who married who, what the alliances looked like, etc., is not important to most of our data. Material networks followed other courses than those found in epigraphy and iconography. The linguistic and art-historical part of Maya studies is dominant in the interpretation since texts, language and iconography are believed to reveal more significant information. However, what people do and what they say they do, is something completely different. Archaeology would do well without the sources above since it shapes the interpretation before the interpretative processes begin. By having a territory based on Emblem glyphs or thiessen polygons, it is assumed that other artefacts should be fitted with the political economy and social organization that is assumed to have existed within or between these territories.

Therefore, we cannot use predefined concepts such as lineage, house society, state, etc. These will only obscure tendencies. What I have tried to create here is a tool box that I will use when I discuss the causeways at Ichmul and Yo'okop in Section 5. These tools do not rely on predefined essential categories. Once a pattern has been found (the polyagentive assemblages), they will be analyzed from various perspectives. There will not be a final answer here. Only when the material assemblages have been established and the differences noted can one bring in iconography and epigraphy, if they are present at the site or at nearby sites and is contemporary with the rest of the data. However, these data should be treated as differences in kind to archaeological data, not treated as if they "tell the same story". New patterns will emerge that would have been impossible by using static macro-level units where everything is seen from an arbolic order in which royal cosmology and politics is the norm from which everything else is measured in an orthogenetic or ontogenetic evolution. Clearly defined macro-level processes should come to an end.

For example, one can only give a "specific" answer, such as that causeways reflects centralization if all other tendencies immanent to the structures are reduced and the tendency of centralization is reduced to be a dialectic opposite of decentralization. That is, specific answers can only be given if one has already defined the solution as a difference of degree to a socio-political and economic model that has been formed from an arbolic structure.

Therefore, differences and tendencies in empirical data is crucial in order to create "nomadic" explanations that break with stereotyped views of the past. So far I have discussed the polyagentive approach in a general sense, sometimes exemplifying with causeways to illustrate my points. It is now time to enter the roads in-between at Ichmul and Yo'okop. It is only on a local level where we can find diversity.

4

Fieldwork in the Cochuah region

4.1. A brief introduction to the fieldwork in the Cochuah region

In this Section, I present data from six field seasons in the Cochuah region (2000-2005). All investigated sites are not included (such as sites and caves in the ejidos of Sacalaca and San Felipe). Neither is this field data presented from a polyagentive perspective, I save that for Section 5.

The Cochuah region (figure 26) lies in west-central Quintana Roo and south-eastern Yucatan (Roys 1965). It lies between areas surveyed by Sanders (1960) and Harrison (1973; 1981). The nearest well studied sites are between 60 and 100 kilometers away. Little archaeological work has been done in the region. One reason for this is that during the nineteenth century, when archaeological work began in the Maya area, this was one of the central areas for the Caste War and its aftermath (Reed 2001).

4.1.1. The history of the region from the Middle Formative to the Spanish Contact period

All dates here are approximate. Only Nohcacab and Yo'okop in the Cochuah region can be placed within the Middle Formative (6/500 – 300 B.C.) Komchen ceramic sphere. However, even test pits excavated at Sacalaca, San Felipe, San Pedro and Xquerol have Middle Formative ceramics in a limited number. Most of these sites have relatively deep soils and this could potentially explain why people settled at these locations (Shaw in preparation-b). Surface collection in the rejollada at Chakal Ja'as shows a large sample of Middle Formative sherds. No Middle Formative sherds were found at the surface site (Johnstone 2006:7).

From what is known, most of the Cochuah region was settled by the Late Formative (300 B.C. – A.D. 250) (Shaw 2003c). Together with the Terminal Classic, this is the most active period of the region. The ceramics dating to the Late Formative belongs to the Chicanel ceramic sphere with Sierra Red as the dominant ceramic type (Johnstone 2003a:107). The cave sites of the Cochuah region, with the exception of Chakal Ja'as, were first occupied during this period (Shaw in preparation-b).

There is very little Early Classic activity at most sites in the Cochuah region. Minor traces of Early Classic ceramics have been found at Nohcacab, Sacalaca, San Andres and Xbalcheil. It seems that much of the area had a hiatus in occupation. The population in the Cochuah region may have been concentrated to larger centres such as Ichmul and Yo'okop. These two sites may have been rivals and the depopulation of the smaller surrounding sites could maybe reflect this pattern, in which a buffer zone existed between them (Shaw in preparation-b). The local ceramics place the sites within the Xculul ceramic sphere (Johnstone 2005a). Izamal appears to have been the major site of the Northern Lowlands during this time (Lincoln 1980). It had a characteristic "megalithic" architecture also known from several other sites, including Yo'okop.

Some minor sites in the Cochuah region seem to have had a resident population during the Early Classic. The small site of Xbalcheil, southeast of Ichmul, had some traces of Early Classic ceramics (Johnstone 2006:1). The Early Classic presence is more profound at San Felipe and Sisal in the southern part of the region. These two sites, together with Ichmul and Yo'okop have a fairly high percentage of tradewares from the Peten. Harrison (1981:284) argues for a "Peten corridor"

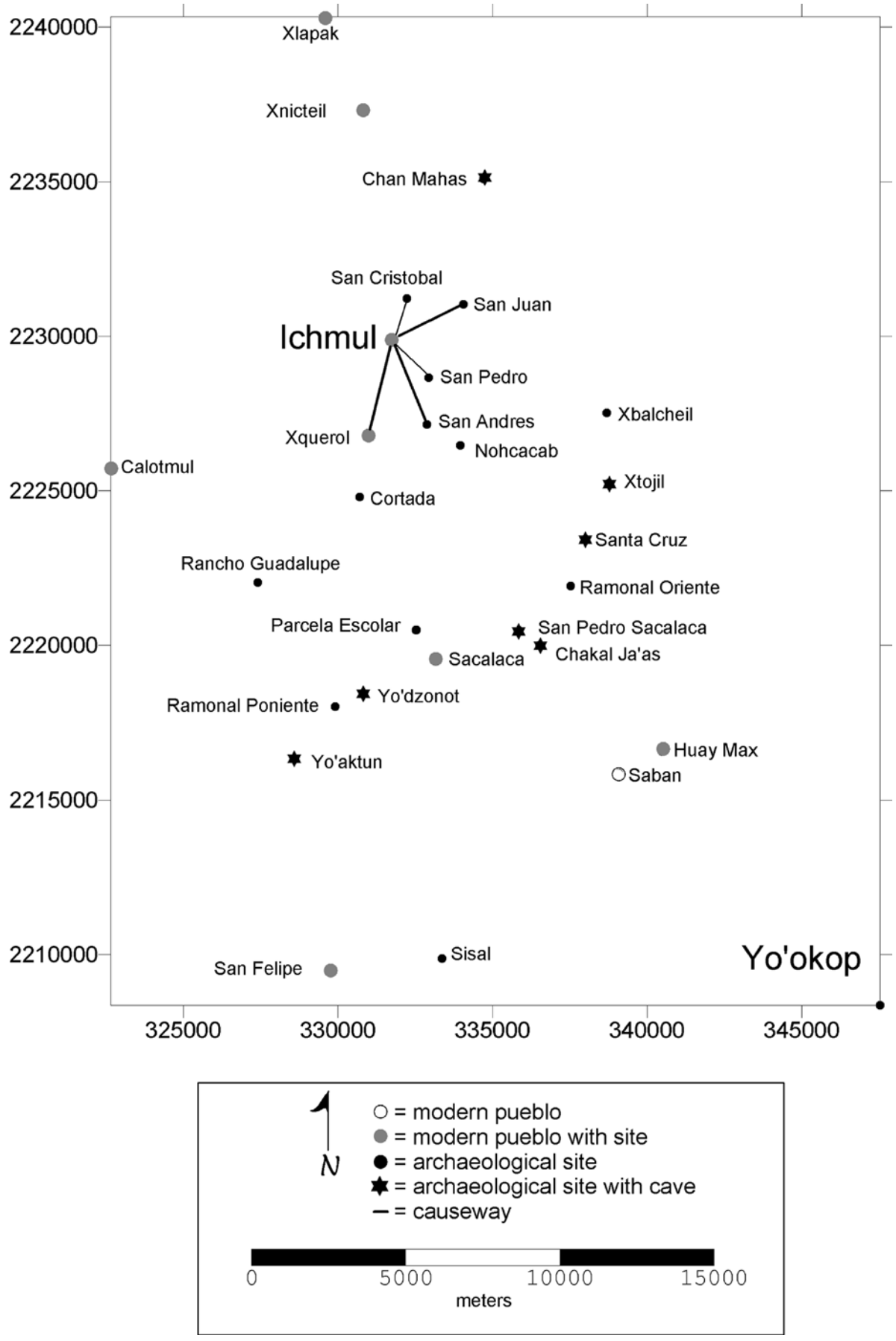


Figure 26. The Cochuah region.

that is believed to have extended from the south to the northern site of Coba. Schele and Mathews (1998) believe that Coba was associated with the Kaan kingdom (Calakmul/Dzibanche) during the Late Classic and maybe during the Early Classic as well. There is scarce hieroglyphic evidence that Yo'okop also had a relationship with the Kaan kingdom (Martin 1997; Wren and Nygard 2005). Both Ichmul and Yo'okop have settlement resembling that of the Peten, with formal plaza-range structure arrangements.

The Late Classic (A.D. 550 – 800) is likewise a period of little evidence in the Cochuah region. Ichmul lacks any known construction activity from this period, but this is probably a sampling bias. Yo'okop appears to have maintained the contacts to the south due to the presence of tradewares. Yo'okop's Group B and parts of Group A had substantial Late Classic activity, but the period has left few remains at the smaller sites of the region (Shaw in preparation-b).

The Terminal Classic (A.D. 800 – 1100) settlement in the Cochuah region led to either a dispersed or increased occupation (Shaw 2004a). Shaw (in preparation-b) believes there was immigration to the region from other parts of the Maya area. The sites in the Cochuah region can be assigned to the Western Cehpech ceramic sphere which includes sites with complexes that are dominated by Puuc Unslipped and Puuc Slate wares. The presence of Dzitas Slate wares at Nohcacab suggests closer ties to Chichen Itza than any other site in the region, although these are still a very small percentage of the Terminal Classic assemblage from Nohcacab (Johnstone 2003a:107). Architecture of the Florescent style dominated throughout the region. Notable exceptions are two late open-fronted or "Postmonumental" architecture at Nohcacab (Shaw and Johnstone in press).

Like elsewhere in the Northern Lowlands, there was a depopulation of the the Cochuah region during the Postclassic (A.D. 1100 – 1544). Postclassic populations in the Cochuah region are evident from many shrines and altars, particularly at Nohcacab (Normark 2003c) and at Yo'okop (Shaw, et al. 2000). The quite substantial Postclassic structures at Yo'okop are built in the East coast style (as typically seen at Tulum) (ibid). There are indications that the East coast style, earlier believed to be of a Late Postclassic date, can be dated to before A.D. 1200 (Toscano Hernández 1994).

At the time of the Spanish contact, the Kuchkabal Cochuah (figure 1) was located between Cupul to the north, Sotuta and Maní to the west, Cehache and Uaymil to the south and Ecab to the east. The province was controlled by Nakahum Cochuah, which was a jalach winik whose seat was in Tihosuco (probably not contemporary Tihosuco which is a congregated settlement from 1559) (Flores and Kaeding 2004). Roys believes that the capital was near Ichmul since Ichmul became the religious capital during the Colonial period (Roys 1957:135-137). The Asunción Bay probably was part of the Cochuah province (Gerhard 1993), or at least under its control.

The first Spaniards came to the area in 1511 and Pacheco conquered the Cochuah region in 1544-1546 (Gerhard 1991:62). There was a rebellion in the Cochuah, Cupul and Sotuta provinces in 1546 (Roys 1957:137). Cochuah was the southernmost province under Spanish control. The Spaniards established the *encomienda*, which gave them the rights to the labour of all indigenous people in the region (Kaeding n.d:2-3). In 1548, the Cochuah region was divided among the encomenderos in Valladolid (Gerhard 1993:77). The encomienda as a political strategy was abandoned throughout most of Mexico around 1550 when the Spanish government aimed to expand its power (Sluyter 2002:87-88). However, in Yucatan, the encomienda lasted into the eighteenth century (Alexander 2003:200).

4.1.2. Field research background – CRAS and PAY

Most of the fieldwork has been excavated following other agendas than the polyagentive archaeology would have focused on. Still, this is not a major problem since the polyagentive approach can easily be used with this data.

Proyecto Arqueológico Yo'okop (PAY) and Cochuah Regional Archaeological Survey (CRAS)

Yo'okop, also known as Okop or La Aguada, in the *ejido* of Saban, was first mentioned by Mason and Spinden (Mason 1927). In 1954, Stromsvik and others (1955) visited Ichmul, Xquerol and Yo'okop. Walker and Wilson briefly visited Yo'okop in 1966. In 1969, a pilot called Clapp located more of the site and Walker and Wilson returned in 1972 (Wilson 1974). Martos López (1997) has worked at the nearby Caste War fortification called Fortín de Yo'okop. INAH (Instituto Nacional de Antropología e Historia) made a basic reconnaissance and surface collection at Yo'okop in 1998.

Shaw and Johnstone visited Yo'okop in 1998 and they began their first systematic and formal fieldwork at Yo'okop in 2000 (Shaw 2001f). The PAY project ran for three seasons; 2000, 2001 and 2002. In 2003 PAY was transformed into CRAS with the same principle investigators. The project changed the focus to a regional survey of settlements in the Cochuah region, primarily in the ejidos of Ichmul, Xquerol, Sacalaca and San Felipe. The CRAS Project made an informal trip to Ichmul in 2003. Ichmul became the focus of research for Flores and Normark during the 2004 and 2005 seasons, when they led a joint sub-project on causeways within CRAS.

The field research which is the empirical foundation for this thesis included mapping portions of causeways, monumental architecture and residential zones. Brief reconnaissance was also undertaken. A total of 32 test pits were excavated and 3 full-scale excavations were carried out throughout the region. Ceramics were analyzed by Johnstone.

Survey and mapping methods

A laser transit (Topcon GTS-213) with a data collector was used in the PAY and CRAS projects. Topography and details of structures and features were mapped. The investigated areas were often covered by tall zacate grass and secondary forest. Since this vegetation gave poor visibility these areas were cleared by local workers. Either whole areas were cleared or brechas (paths) were cut to nearby structures. The local workers also helped to search for structures and features.

Mapped points were given a coordinate relative to each site datum. Each measured point was given a descriptive code and a short comment. Surfer (version 7.0) maps were generated every day in order to control the mapping process. The maps in this thesis are shown in Surfer versions, rather than in Arcview versions. All maps of the sites are presented topographically, only preserved wall lines and foundation braces are outlined. The contour interval is 0.50 meter on most maps in order to distinguish smaller mounds.

The names of structures come from their location in relation to the site datum. For example, N1E1-1 is located within the first hectare north and east of the site datum. If more than one structure exists within this square, they are numbered clockwise.

Four of the causeways around Ichmul were investigated and documented with the use of a hand held Global Positioning System (Garmin 12CX GPS), following a lightly cleared brecha along one side of each causeway. Other features and briefly visited sites were also located with GPS.

Excavation methods

Surface collections were only used on a limited basis. The focus was rather on test pits excavated in plazas in order to obtain ceramics from sealed contexts. The ceramics were used to establish a basic chronology of occupation at sites and of the region. Another purpose for Shaw and Johnstone was to understand the political and economic contacts of the sites. Most test pits were 2 x 2 meters, but some were smaller due to time constraints or logistical concerns. The pits were generally excavated following natural or "cultural" (not arbitrary) levels. The materials were separated in the Operation/Level/Lot system. All test pits were filled in afterwards. Three structures were completely excavated and consolidated (one at Yo'okop and two at Nohcacab).

Ceramic analyzes

The ceramics collected from the test pits, the full scale excavations and some surface collections were analyzed according to the Type-Variety approach (Smith, et al.1960) by Johnstone (table 4). The project(s) has focused on test pits since surface collections give a biased view due to poor preservation that leads to problems in classification. Durable types are overrepresentated and sherds from the most recent occupation dominate the sample (Johnstone 2006:1). Section 9 lists the ceramics found in the excavations.

The ceramic complex of a site is the total ceramic content during a period. No sites have identical complexes, but there are similarities. Complexes that share most of their common types belong to a sphere. The original idea with the ceramic sphere was to be able to correlate ceramic complexes into horizons that could resolve problems concerning contemporaneity between sites (Willey, et al. 1967:306). The emphasis within the ceramic sphere is on typological similarities and differences between ceramic complexes. If two or more complexes share common types, they belong to a sphere. A sphere consists of all types and modes in the complexes that make up the sphere (Rice and Forsyth 2004:30). Ball (1976:325) shows that diagnostic types are abundant and shared between ceramic complexes in a sphere. A specific type can also be affiliated with more than one sphere. Therefore, ceramic spheres are quantitatively defined. This means that it is not ceramic types or groups that share a sphere affiliation, it is the complexes. These spheres are seen as dynamic, both in time and space (Rice and Forsyth 2004:30-31). Types may be time sensitive but they are not sphere specific since ceramics are portable. Ball's (1979) "total overlap model" argues that there were several ceramic spheres that coexisted. The spheres imply a technological contact and a common ceramic tradition from which archaeologists try to understand other humanocentric units (Shaw and Johnstone 2006). While complexes from two sites can be objectively/statistically similar, the significance of that similarity is a subjective assessment.

It is argued that the ceramic spheres indicate economic relations, such as organization of ceramic production, trade networks and regional economic integration. People did not just copy vessel shapes and decorations but there was also a trade or exchange of distinctive vessels within a

Middle Formative	Lagartos Punctate	Maxcanu Buff	Yokat Striated
Achiotes Unslipped	Alta Mira Fluted	Hunabchen Red	Yokat v. Applique
Chunhinta Black v. Ucu	Repasto Black on Red	Kanachen Black	Oxkutzcab Applique
Nacolal Incised	Flor Cream	Tituc Orange Polychrome v. Tituc	Muna Slate
Dzocobel Red on Black	Mateo Red on Cream	Tituc Orange Polychrome v. Bandas	Sacalum Black on Slate
Joventud Red	Polvero Black	Tituc Orange Polychrome v. Camichin	Tekit Incised
Desvario Chamfered			Tekit Incised v. Dzib
Guitarra Incised	**Early Classic**	**Late Classic**	Akil Impressed
Dzudzuquil Cream to Buff	Saban Unslipped	Dos Caras Striated	Teabo Red
Tumben Incised	Yaxcaba Striated	Sacalaca Striated	Becal Incised
Petjal Red on Black and Cream	Xanaba Red	Encanto Striated v. Sacna	Ticul Thin Slate
Majan Red on Cream	Caucel Trickel on Red	Arena Red	Tabi Gouged-Incised
	Tituc Orange Polychrome v. Tituc	Batres Red	Dzitas Slate
Late Formative	Huachinango Bichrome Incised	Lakin Impressed	Balantun Black on Slate
Tipikal Red on Striated	Balanza Black	Muna Slate (LC)	Chacmay Incised
Unto Preslipped Striated Black	Lucha Incised	Sacalum Black on Slate (LC)	Piste Striated
Chancenote Unslipped	Aguila Orange	Saxche Orange Polychrome	
Tankah Unslipped	San Blas Red on Orange	Juleki Cream Polychrome	**Postclassic**
Xanaba Red (LF)	Dos Arroyos Orange Polychrome	Chantori Black on Orange	Tohil Group
Dzalpach Composite	Caldero Buff Polychrome	Sayan Red on Cream	Navula Unslipped
Sierra Red	Cetelac Fiber Tempered		Yacman Striated
Laguna Verde Incised	Elote Impressed	**Terminal Classic**	Chen Mul Modeled
Ciego Composite	Yalchak Striated	Chum Unslipped	Mama Red

Table 4. Ceramic types found in the Cochuah region.

region (Rice and Forsyth 2004:52). Johnstone (2005:165) believes there were smaller regional spheres, instead of pan-peninsular spheres. Shaw and Johnstone (2006) argue that since architecture is not portable, this kind of materiality would indicate a more permanent influence than ceramics. Together with ceramics this could be used to define political units.

To be able to set the ceramic complexes of sites within a regional framework (the ceramic sphere), restrictions concerning sample size, context, methodology and comparative material were used by the CRAS project. Only complexes with more than one hundred identifiable sherds were considered by Johnstone. However, some contexts may overrepresent particular ceramic types but this is not a problem since most of the ceramics from the test pits and the full scale excavations come from secondary or tertiary contexts (Shaw and Johnstone 2006).

As mentioned in Section 3, the typological method relies on a top to bottom approach. For these reasons, I am hesitant to use either a pan-peninsular or a regional approach to compare ceramic complexes. It is assumed that the sphere reflects other entities as well, such as an interaction sphere, polity, state, or something else that has a near complete territorial coverage. The sphere also brings along quasi-objects, such as culture. In my view, the complexes would represent populations of a ceramic phylum with diverse histories which are not isolated from the surrounding world, otherwise we would not be able to date them. The local histories work on different levels and follow different social courses, not all easily lumped together as interaction sphere, polity or state. Most of these courses stay within the local area, and few enter from the surrounding area, but to say that the courses reflects regional economies, political territories or ethnic boundaries simply does not fit my approach here. Still, the complexes can be compared for dating, and it is as such they are used in this thesis.

I use the idea of the polyagentive network which does not rely on a complete spatial coverage which the metaphor of the sphere implies. In the network metaphor there are nodes that may bypass certain geographic areas and institutions. These networks fluctuate in their temporal and spatial extent. There is also a distinction between a ceramics network and an architectural network. These networks represent differences in kind; they belong to a multitude of nested phyla. Ceramics and architecture work along different courses. A vessel can be brought to one site and copied by local potters, but it will always use local materials and therefore be classified as a different type by the archaeologist. Copying a temple design either needs to bring a foreign mason or architect, or the need for a local mason or architect to memorise the architecture well and later copy it from memory. Within the ceramics network we have different types and groups that are differences in degree to each others. The complexes that make up a sphere are mainly a local ceramics network with nodes that extend outside the local area through networking processes.

4.2. Ichmul

Ichmul lies in southeast Yucatan, near the border to Quintana Roo (figure 27). The contemporary town of Ichmul has Prehispanic, Colonial, Caste War and modern architecture. Around two thousand people live in the ejido of Ichmul today.

There are examples from the Northern Lowlands where there arguably is a continuity in place names. It seems that the Emblem glyph for Dzibilchaltun probably was Ichkaantijo. The colonial period name of nearby Mérida was the same (Graña-Behrens 2006:107). Acanceh's glyphic name appears to have been Akankej (ibid:117). The word *mul* in Ichmul is attributed to ruins and this would indicate a break in occupation at the site. Mul means mound made by hand (Flores and Normark 2004b:24). Thus, Ichmul is most likely not the original name. By the time of the Spanish conquest, the inhabitants of Ichmul are believed to have had no knowledge of the earlier occupants (Roys 1957:140).

The Prehispanic settlement of Ichmul is dominated by the Central Acropolis, the Eastern

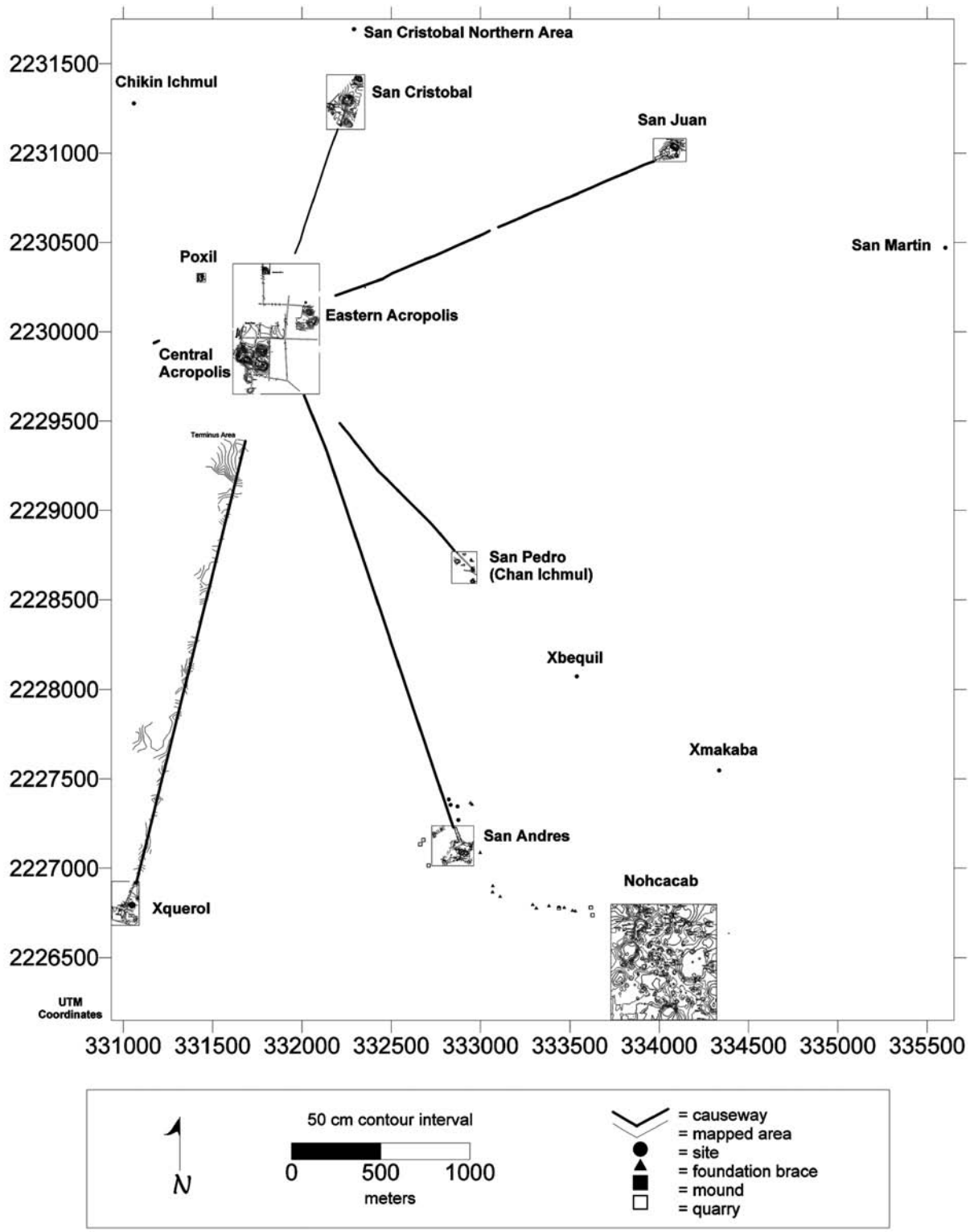


Figure 27. Ichmul and its surroundings.

Acropolis and the Great Plaza. Five causeways radiate out from the site to smaller settlements in two distinct patterns; the triadic causeways (San Juan, San Andres and Xquerol) and the aligned causeways (San Cristobal and San Pedro). Like some of the causeways at Caracol (Chase and Chase 2001a), the triadic causeways of Ichmul probably extended 2.7 to 3 kilometers out from the epicentre and today they end in large plaza areas. Ichmul does not have the second ring of termini sites like that of Caracol, which were 4.5 to 9 kilometers away. Within this distance, we have the sites of Xlapak, Calotmul, and Sacalaca which may have been connected to Ichmul by informal

routes.

Unfortunately, the causeways have been destroyed within the modern settlement of Ichmul. Causeway 6 and 14 at Chichen Itza lacked sufficient volume and were covered by red soils (Cobos and Winemiller 2001:285). This is not likely to have occurred at Ichmul. The causeways at Ichmul are believed to have been used for constructing albarradas and houses during the Colonial period. The Xquerol causeway has also had its terminus area affected by later settlement and a modern dirt road. However, all the causeways seem to have extended further into Ichmul than what is currently seen (Flores and Normark 2004a).

Contrary to Yo'okop, which had a unified alignment for most of its monumental and domestic structures (apart from Group D and other late structures), Ichmul shows no such unity. The structures in the Central Acropolis have an alignment of 17 degrees east of north, but the top of the pyramidal Structure S1E1-1, which may be Postclassic, has an alignment of 11 degrees. The structures in the Eastern Acropolis have an alignment of 23 degrees. The main structure at San Andres has an alignment of 14 degrees, San Juan has 30 degrees, Xquerol has 9 degrees, San Cristobal has 18 degrees and San Pedro has 50 degrees.

Prehispanic chronology

There have only been two test pits excavated in central Ichmul and the chronology of the site is still a bit sketchy. However, if we include the termini sites and the nearby site of Nohcacab, 14 test pits have been excavated and there have been two full scale excavations at Greater Ichmul.

No Formative period ceramics have been found in sealed contexts at Ichmul. There are not even enough Middle Formative sherds to define a ceramic complex at Ichmul (Johnstone 2005b). However, the Middle Formative Ch'ik complex at Nohcacab has types similar to those in the Komchen sphere, but it lacks a strong Achiotes constituent (Johnstone 2004a).

Ichmul's Late Formative San Andres complex indicates a sizeable occupation at the site, but so far, no construction from this period is known. There was a single sherd of Usulatan Ware that could have come from the Pacific coasts of Guatemala or El Salvador (Johnstone 2005b). At Xquerol there are early and late facets of the Late Formative (Johnstone 2003a; Normark 2003b). Late Formative architectural elements and Late Formative ceramics are also known from Nohcacab (Johnstone 2004a).

The Early Classic complex of Ichmul is called San Pedro. Most ceramics found at Ichmul so far come from this period. Relative to other sites in the CRAS study area, there were high frequencies of imported ceramics from Peten and Belize (Agúila Orange and Dos Arroyos) (Johnstone 2005b). The Ch'omak complex at Nohcacab is similar to the Ixchel complex at Yo'okop. It is dominated by Xanaba Red and has high proportions of imported polychromes from the northeast (Tituc) and from Belize (Dos Arroyos). Architecturally, there are similarities with Peten, in terms of plaza-range structure arrangements in the Central Acropolis (Johnstone 2004a:95).

There are too few Late Classic sherds in the sample so far excavated at Ichmul to define a ceramic complex or to compare it with another site. This could be a sampling bias rather than a true lack of construction activity (Johnstone 2005b). However, people at least lived at the site during the Late Classic. The nearby cave site of Xmakabha, has traces of Late Classic occupation (Johnstone 2006:7). Nohcacab's Late Classic Keh complex is also similar to Yo'okop. There is a high frequency of redwares (Arena), produced locally, and some striated types from the Caribbean coast. A high frequency of Peten Polychrome (Saxche) pottery may indicate that a trade route went through the region (Johnstone 2004a:95).

Ichmul's Terminal Classic San Juan complex is typical for the Northern Lowlands. It is dominated by the Chum and Muna groups. There is an absence of Thin Slateware which stands in contrast to Nohcacab and San Felipe (Johnstone 2005b:179). Xquerol has both Puuc and Chichen Slatewares (the latter is scarce) (Johnstone 2003a). San Andres' Terminal Classic Pek complex is

typologically similar to Ichmul but it has a high frequency of Yokat Striated (Johnstone 2005b:180). At Nohcacab, 3.7% of the identifiable ceramics that dated to the Terminal Classic were Chichen-affiliated. Thus, Nohcacab is seen as part of the Sotuta ceramic sphere. The Chichen Itza-related ceramics are unevenly distributed at Nohcacab. At Nohcacab's two open-fronted (postmonumental) structures, the Chichen Itza-related ceramics were 5.8% of the Terminal Classic sample. For the rest of Nohcacab, this number was only 0.4%. It is still uncertain why this difference exists. It is possible that the assemblages were chronologically separated. If they were contemporary it could have been the result of different identities, but perhaps not any ethnic differentiation (Normark 2006). However, those who lived in or used the open-fronted structures were the main users of Chichen affiliated ceramics, but they still predominantly relied on local ceramics (Johnstone 2004a:96). Nohcacab and San Andres are part of the same continuous settlement. However, Chichen Slateware was not encountered in the two test pits at San Andres. It is possible that the columns in Patio 2 of Structure S1E1-10 in San Andres could be part of a Chichen Itza-inspired construction, but this does not imply a Chichen presence in the area. Smaller columns are also known from the Puuc area and at other Florescent sites in the CRAS area, such as at Nohcacab.

Ichmul may have been an important place at the time of the Spanish contact. The Franciscan friars chose important locations, both religious and demographic, to settle their monasteries (Quezada 1997:131-134). However, no Postclassic architectural remains have so far been detected in modern Ichmul. This could be the result of Colonial, Caste War or modern settlement, or it could be a sampling bias (Johnstone 2005b:180). Stromsvik and others collected a small sample of ceramics that could be Postclassic Mayapan Redwares, or they were from the Colonial period (Stromsvik, et al. 1955:171). If there was a major Postclassic settlement at Ichmul it may have been obliterated by Colonial and Caste War structures or it was located where investigations have not taken place yet. Lessons learned from Operation 3 in Ichmul indicate that even if a test pit is excavated near one of the largest Colonial period structures of the site, such as the unfinished church, Colonial ceramics or other Colonial artefacts will not necessarily be encountered. The reason for this is refuse disposal and later human activities. This would also be possible for the Postclassic period.

However, in Operation 1 at Ichmul, 450 meters south of central Ichmul, some Postclassic inscensario sherds have been located (Johnstone 2004a). At Xquerol and Nohcacab, Postclassic sherds, such as Chen Mul inscensario fragments, are only found in post-construction contexts (Johnstone 2003a). Nohcacab has a large number of small Postclassic shrines (Normark 2003c).

The Colonial period and the Caste War

The Colonial town of Ichmul is the result of the Spanish *congregación* policy. Peripheral communities had to leave their small villages during the early Colonial period and they were re-settled in new nucleated towns following Spanish patterns. These new towns were called *tzukul* or *parcialidades* (Clendinnen 1987). The Spaniards could tax and catechize the people in the new towns (Rice 2004:17). These nucleated settlements were chosen for their access to agricultural land. Leaders of the indigenous population helped the friars to select the locations (Williams 1999:407). The congregación policy was implemented in 1552 and was opposed by encomenderos and by the farmers that were removed from their homes (ibid:401).

The congregation policy often led to abandonment of the congregated towns, often by one or two families at a time, in order to escape friars and encomenderos. They either moved to other towns or beyond areas of Spanish control (Dumond 1997:37; Farriss 1984:16-18). This dispersal sometimes led to the foundation of *visita* communities (Alexander 1997:30-31).

The largest congregated settlement in an area was the *cabacera de doctrina* (the centre of administration and religion). Sometimes cabacera was an equivalent term to capital in the Spanish documents (Quezada 1991:62). The cabaceras contained a large church, monastery and the

Spaniards. The smaller settlements surrounding the cabacera were called visitas, *pueblos* or *sujetos* which all had smaller churches without any clergy (Alexander 1997:29-31).

During the early Colonial period, the Franciscan order dominated in the Yucatan (Clendinnen 1987:46). Ichmul's Franciscan monastery, San Bernardo de Sena Ichmul, was founded in 1571 (Andrews 1991; Bretos 1992). This monastery had a *huerta* (garden) and a *noria* (well) (Ciudad Real 1979:328; Flores and Kaeding 2004:155).

The royal ordinances from 1573 introduced the gridiron format throughout the Spanish colonies. This included a central town plaza with streets at right angles to the central plaza. The streets were oriented to the cardinal directions (Forrest 1997:37). The Colonial period plaza was surrounded by administrative and religious buildings (Lockhart and Schwartz 1983:66; Low 1995-751, 1996:867). The church of each town was also placed on the highest point in the town facing a plaza. This was usually on top of an older temple (Forrest 1997:80). As shall be seen, this may have partially been the case at Ichmul. From the Colonial plaza, the settlement radiates out in a grid of roads. People of "highest status" lived near the plaza in stone houses, and the remaining population lived in perishable houses between central Ichmul and its ranchos. These agriculturalists have only left albarradas that defined solares. The ranchos were used for livestock or crop production. Ranchos usually have wells, residential structures, *pilas* (metates), *trapiches* (mills) and corrals. Further away, there were separate settlements, such as visitas (Kaeding 2005:97).

Early on, Ichmul became an important centre for missionary activities that ministered the Cochuah region (Gerhard 1993). Ichmul became the cabacera de doctrina in 1579 (Gerhard 1993:78-80). Other nearby congregación settlements were Tihosuco, Chunhuhub and Chikindzonot (ibid:80-81). Between 1588 and the 1700s, several smaller towns, pueblos and ranchos appeared, probably as the result of dispersal from congregación centres (ibid). The cabacera of Ichmul included eight visita towns (Kaeding n.d.).

The Prehispanic ruins of Ichmul are mentioned in Father Ponce's report from 1588. Five large Prehispanic structures were noted. One of the pyramids had a large cross. The ruins were constructed over vaulted burial chambers according to Ponce's local informants (Ciudad Real 1979:325-329).

The parish of Ichmul was controlled by secular priests from 1602. The Franciscan convent at Ichmul became administered by these priests from 1603 under the influence of Juan de la Huerta (Flores in preparation). Around the time when the secular priests took over after the Franciscans, the Black Blister Christ appeared in Ichmul (Carrillo y Ancona 1979:495). Ichmul became the centre for an extended Black Christ "cult". At this time Ichmul controlled roughly 20,000 people. The parish of Ichmul was divided in 1636. San Agustín Tihosuco became the other parish (Gerhard 1992:62; Quezada 1997:136). The miracle figure of the Black Christ was brought to Mérida sometime between 1657 and 1676 and this led to Ichmul's demise (Casares, et al. 1998:356).

The L-shaped church is the oldest of the three churches at Ichmul. It is of unknown date. The present unfinished convent church began to be built in 1760 but it may have been preceded by earlier structures. It was never finished, probably because it was impossible to close the vaults for either technological or economical reasons. The last church is the current Black Christ sanctuary which contains a replica of the Black Christ image. The church appears to date to the first half of the 19th century (Flores in preparation).

Kaeding (2005) estimates that the remains of late Colonial period Ichmul covers roughly 116.5 hectares, which makes it a Category I site in Alexander's (2004:76) typology. Such a town has several churches, a rectory, shrines, norias, municipal buildings and *quintas* (villas) (ibid). Kaeding (2005:102) suggests, based on work by Alexander (2004:104), that Ichmul had 3,300 people of which 23%, or 759 people, would have been farmers.

The congregated community of Ichmul may have held more people than the amount of agricultural lands allowed. In addition to land-stress, partly caused by cattle *haciendas* that needed

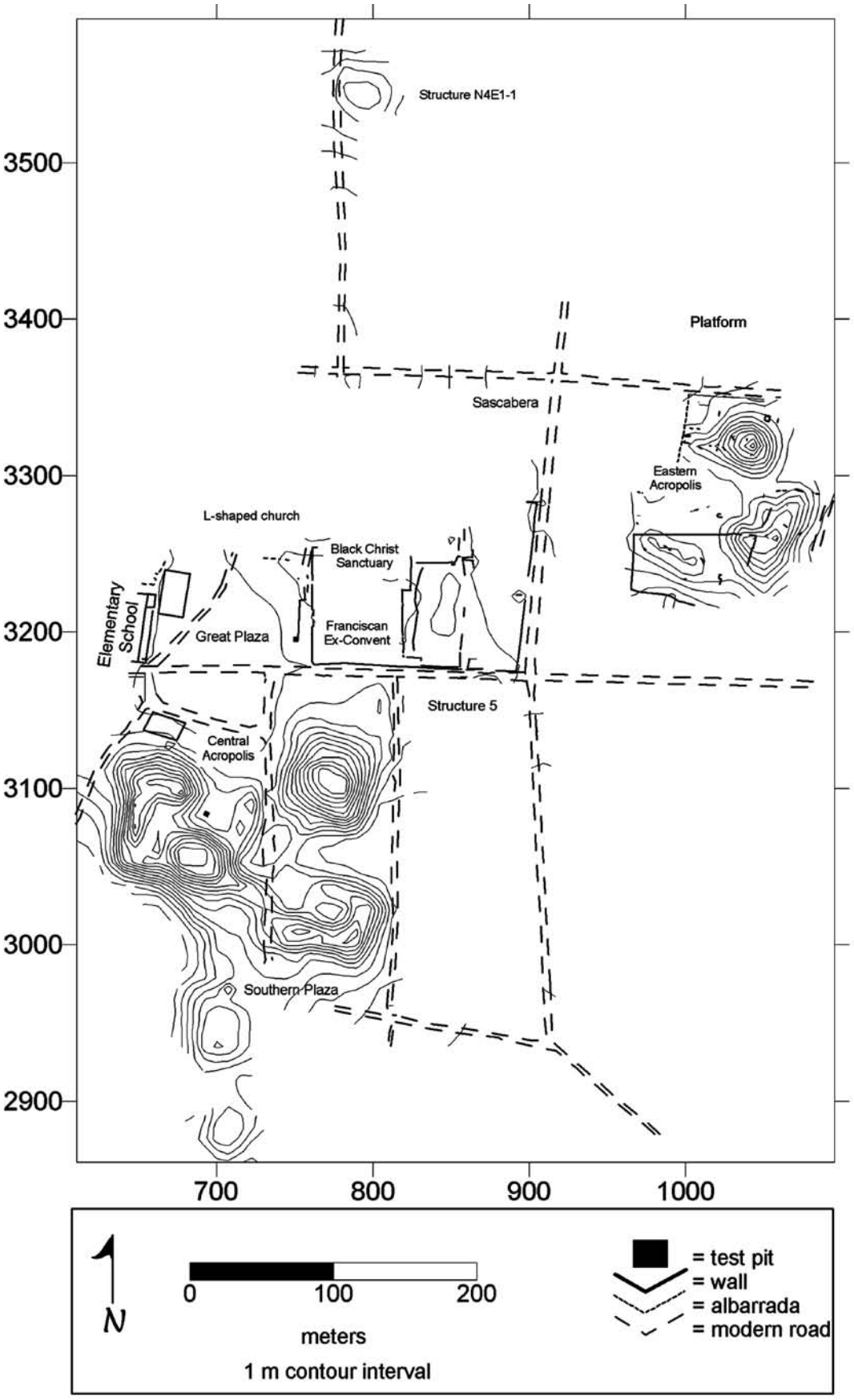


Figure 28. Central Ichmul.

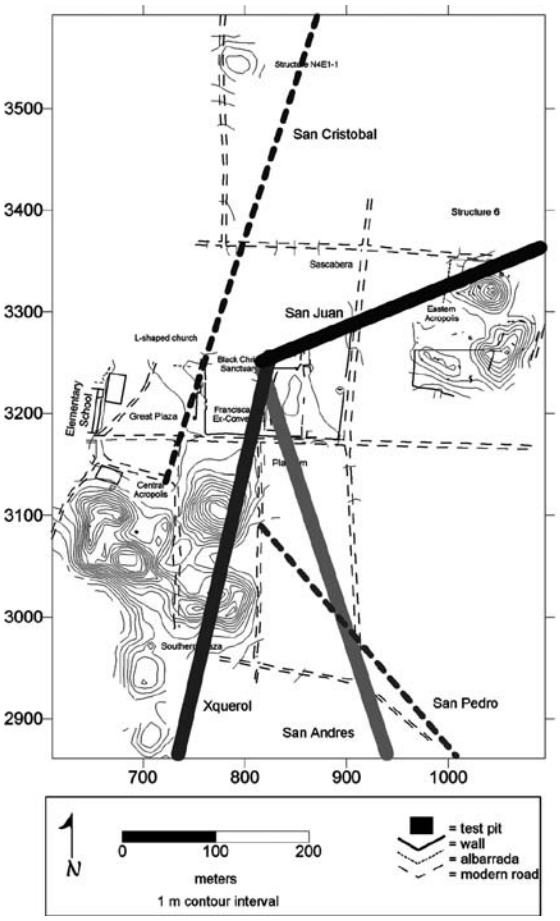


Figure 29. Area of causeway intersection.

more land, this may have led to the dispersal from the congregated towns, the flight from the Spanish and in the end, the Caste War (Alexander 2004:103; Dumond 1997:135; Farriss 1978; Reed 2001:19; Restall 1997:306). However, Alexander's (2004:116) work in nearby Yaxcaba indicates that the Colonial period population had access to more arable land than has been assumed.

Ichmul was attacked on Christmas day in 1847. The town resisted 20 days of rebel attacks during the initial phase of the Caste War. The fortifications in the Central Acropolis are either from this event or from when the federal militia recovered Ichmul in 1848 (Flores and Kaeding 2004:161). The Caste War largely depopulated the town. Ichmul was resettled again around 1900.

4.2.1. Central Ichmul

The central portions of Prehispanic Ichmul measure roughly 700 meters (N-S) by 600 meters (E-W) (figure 28). The area covered by its causeways and settlement adjacent to the termini, covers at least 5,500 meters (N-S) and 4,500 meters (E-W), or 25 km^2.

The Great Plaza

The Great Plaza in Ichmul measures roughly 150 x 100 meters (figure 7). It is encircled on its northern and eastern sides by three churches and a monastery. It is unusual for Colonial sites to have two churches on the eastern side, but it is even more unusual to have an L-shaped church that stands on the northern side of the plaza (Flores and Kaeding 2004:161-166; Lockhart and Schwartz 1983:66; Low 1995:749-751, 1996:867). The white Black Blister Christ church lies on the northeast side of the plaza and on the southeast side is the monastery and the unfinished church. The plaza itself appears to be an enormous low platform or a raised plaza. This could be seen in Operation 3, a test pit which penetrated below the present surface of the plaza. There was a dry core fill that extended at least one meter below the current plaza surface. The plaza levelled the topography to the south and traces of bedrock are visible in its northern part near the L-shaped church. The area northeast of the plaza and north of the white church slopes down (Flores and Normark 2005a:19).

Early Colonial documents from 1550 mention the existence of two cenotes at Ichmul (RHGGY 1983:298). None of these were located during the fieldwork, and are unknown to villagers but, for reasons that will become apparent, it is suspected that one of the cenotes is below the white church.

Operation 3 was situated in a platform upon which the monastery and the unfinished church stand. This platform has a very clearly defined southwest corner, which is one meter higher than the Great Plaza. As the platform extends to the north, it levels out with the terrain, so there is no apparent construction to the north where the white church is. Portions of 7 burials were encountered in this platform. One might be Colonial or later, while the other 6 are from the Terminal Classic (Kaeding and Flores 2005). These burials are fairly contemporary with the layout of the causeways and are located just southwest of the area from where the triadic causeways

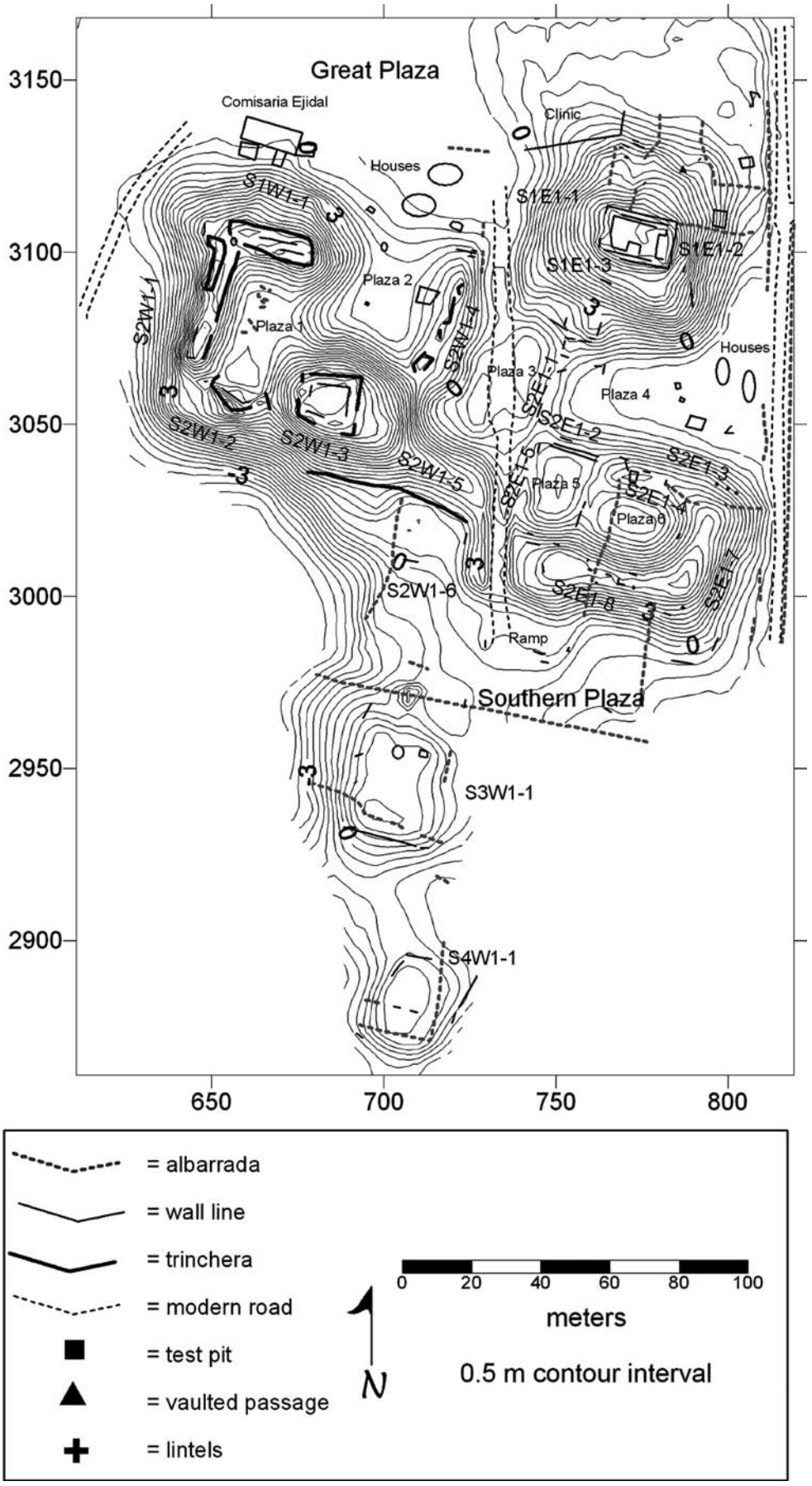


Figure 30. The Central Acropolis.

would have been laid out (figure 29).

The western side of the Great Plaza is an area occupied by a school and a basketball court. The school is built upon a raised area that is likely to be a wide platform similar in extent to the one to the east. The modern road to Peto passes immediately to the south of this platform. Further south, there is an unmapped extension of the Central Acropolis crossed by the road to Xquerol. The ancient Great Plaza may have been bounded in the west by the 'school platform', but may have extended further to the west in the southwest corner where the Central Acropolis extension is (Flores and Normark 2005a:20).

The Central Acropolis

The dominant Prehispanic structures at Ichmul are to be found in an arrangement called the Central Acropolis (figure 30). The whole Central Acropolis covers an area of more than 210 x 190 meters, roughly four hectares. This acropolis consists of at least 11 range structures, 6 plazas and 2 pyramids (Flores and Normark 2005a:7). These are outlined in a pattern similar to sites in the Southern Lowlands which have formal plaza groups (Flores and Normark 2004b:58).

Behind Ichmul's *comisaria* is Plaza 1, which is the highest elevated of the plazas in the Central Acropolis. It is enclosed on three sides by three range structures; Structures S1W1-1, S2W1-1, and S2W1-2, which all have substantial and well-preserved Caste War fortifications. These walls are sometimes up to two meters high and were probably constructed from stones taken from the Central Acropolis or from structures around the Great Plaza. Traces of low platforms were seen beneath the Caste War fortifications. These were probably parts of the original structures. A large concrete circular feature of fairly recent date is placed in between Structure S1W1-1 and Structure S2W1-1. There is a ten meters high pyramidal structure, in the southeastern part of the plaza, Structure S2W1-3, also covered with Caste War fortifications (figures 9 and 31). Traces of low platforms surrounding a small patio on top of the pyramid may have supported perishable structures in Prehispanic times (ibid:58).

East of Plaza 1 is Plaza 2, situated on a lower level. Operation 2 at Ichmul was located in Plaza 2 in order to establish the chronology of the acropolis. The results from this test pit show that construction in this portion of the site dates back to the Early Classic. Although Late Formative sherds were encountered, they were mixed with Early Classic ceramics. The plaza floor was built up more than one meter during the Early Classic, suggesting that this was the major period of construction in this particular plaza area. There was one flooring episode during the Terminal Classic. The plaza was covered by debris during the later Terminal Classic, but it might still have been inhabited (Flores 2005; Flores and Normark 2005a:12).

Figure 31. Caste War fortifications on S2W1-3.

Plaza 2 is bordered on the east side by Structure S2W1-4. This range structure has remains of Caste War fortifications. The southern edge of the plaza is bounded by the pyramidal Structure S2W1-3. The northern part of the plaza is open towards the Great Plaza. Southeast of Plaza 2 is Plaza 3, on a lower level. It is bounded by Structures S2W1-4, S2W1-5 and S2E1-1. The western

part of the plaza is lower than the east side where a modern road has been constructed. This road cuts through Structure S2W1-6, which is a large platform set in the southernmost section of the acropolis (Flores and Normark 2004b:58-62).

Figure 32. Toilet pit with exposed veneer wall.

An unmapped platform extends to the west of the acropolis. It is crossed by the modern road to Xquerol. The owner of the solar where the platform is located says it contained a vaulted structure that collapsed a few years ago (ibid:62). This may be the Puuc- or Chenes style building Stromsvik and others (1955:171) mention in their report.

None of the investigated structures in the eastern part of the Central Acropolis have any traces of Caste War fortifications, which partly explain the better state of preservation in this location. The eastern part is dominated by the pyramidal Structure S1E1-1. It measures 70 x 75 x 10 meters. There is a Colonial wall that encloses a clinic, which bounds the pyramid's northwest corner. The clinic has a terraced garden. The terrace follows the lowest of the terraces of the pyramidal structure. An abandoned toilet pit close to the Colonial wall reveals a Terminal Classic wall, which has some plaster on the surface (figure 32). The plaster shows traces of red pigment. This wall is in line with the terrace at the clinic. A solar occupies the platform/acropolis that extends northwards from the pyramid to the street that passes between the pyramid and the nearby ruined Franciscan monastery. Parts of the eastern side of this platform are bordered by an albarrada. This section is also on a slightly higher level than the north-western end of the platform where the clinic is located (Flores and Normark 2005a:12).

The northern base of the pyramid has traces of a stairway and a T-shaped vault (figure 33). The vault's main axis is aligned north-south. The other part of the vault has an east-west alignment that is located west of the north-south vault. Due to the risk of collapse, this vault was never properly investigated, so its length and width are not known. However, it was possible to stand upright on its floor, making it at least two meters high (ibid:12).

Due to the heavily disturbed surface of Structure S1E1-1, it was not possible to detect how many levels the pyramid once had. However, the pyramidal structure has a well-preserved top, making it very easy to define. Most of its two meters high wall is still standing. The entrance appears to have been from the southwest. The top level may have had vaults that have been filled in. In the eastern wall there is a "window-like" portion that could be the remains of these vaults (figure 34). The interior stones were unconsolidated. However, this is not enough to prove that the top section of the pyramid once had been a vaulted structure (ibid 12). Perhaps the "window" was a niche for some object.

The top of the upper level consists of an inner patio with a low platform running around the patio with two platform extensions into the patio, Structures S1E1-3 and S1E1-2. There is a foundation brace that probably supported a back wall running around the whole top platform. It is likely that the whole patio was sealed off by a taller perishable wall (ibid:12-15).

The large Plaza 4 is located south of the pyramid. It is bordered by the low Structure S2E1-1, on its western side. There is no structure on the eastern side of Plaza 4, apart from two

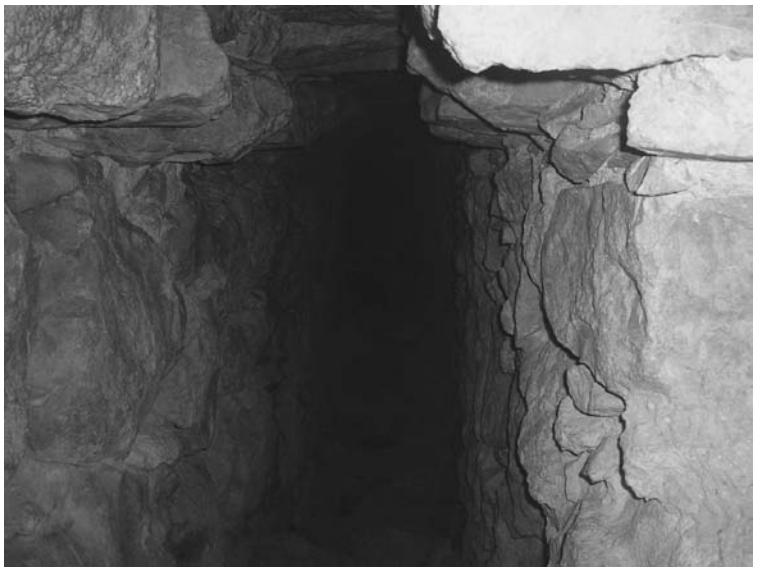


Figure 33. Vaulted passage.

modern houses and some animal pens. A hole has been excavated in the plaza by the owner of the houses, in search for construction material. Dry core fill could be seen in the pit, revealing at least one construction phase (ibid:15).

There is a large un-mapped platform, which is called Structure 5, directly northeast of the pyramid (S1E1-1). Plaza 4 may have been an extension of a larger plaza to the east, which would have been located south of Structure 5, possibly the origin of the San Andres causeway and maybe of the San Pedro causeway as well (ibid:15).

The southern portion of the eastern section of the Central Acropolis consists of substantial range structures encircling a divided plaza, designated as Plazas 5 and 6. The low Structure S2E1-6 is laid out between the plazas. It has traces of foundation braces on its surface (ibid:15).

The northern part of this double-plaza arrangement consists of the lower western Structure S2E1-2. This part has a double wall running east-west along its central axis. Double walls, which would have been filled with a concrete-like mix including smaller stones, are usually indications of Terminal Classic constructions. Its location is unusual as there would not have been enough space to set up a habitable building there. There is no trace of another foundation brace in front of it. Perhaps it is a later albarrada or an unfinished construction (ibid:15).

Directly connected to eastern side of Structure S2E1-2 is a taller northern range structure, Structure S2E1-3. These two structures could be seen as parts of the same structure, but the change in elevation occurs where the plaza is divided, so they were treated as separate buildings. This taller part has a shrine of possible Postclassic date, Structure S2E1-4, and a possible small balustrade running off in an odd angle to the north (ibid:15).

Figure 34. Exterior wall of the top level of S1E1-1.

The western structure, Structure S2E1-5, has been cut through when the modern road that runs through the central portion of the acropolis was made. It is possible to see the remains of interior vertical walls in the profile of the road cut. This structure may have been part of Structure S2W1-5 on the western side of the road (ibid:15).

On the eastern side of the double-plaza is Structure S2E1-7, which is a seven meters high range structure. There are lintels lying on its northern and southern surface. On the southern edge, where it

joins the southern structure there are indications of a possible vaulted room. This is the highest part of the structure (ibid 15-16).

The southern structure, Structure S2E1-8, is the largest around Plazas 5 and 6, measuring 80 x 20 x 6.5 meters. It was probably part of Structure S2W1-6 which is divided in two by the road cut. It has been treated as two different structures, since the original architecture is not known. The construction of the road may have taken advantage of a collapsed vault or a narrow passage that was later widened. Structure S2E1-8 has traces of at least ten tandem and transverse rooms. One room has a fairly well-preserved and partially exposed interior wall. The western portion of the structure is lower than the eastern part. This part has traces of four rooms that appear to have been arranged differently than those to the east. These may not have been vaulted. Based upon the surface indications, there might have been a stairway from Structure S2E1-6, leading up to a vaulted passage, through Structure S2E1-8 and down on the southern side of the structure towards where the Ichmul-Xquerol causeway may have ended (ibid:16).

South of the Central Acropolis is a plaza, labelled the Southern Plaza, and a low ramp or platform. This area has minor foundation braces that do not seem to make up any easily defined structure. The causeway to Xquerol may have begun in this general area, as it would connect with the Central Acropolis just east of where the ramp/platform is. The causeway could not have extended further to the north since this part most likely is older than the causeway (ibid:16).

South of the Southern plaza are two larger platforms, Structure S3W1-1 and Structure S4W1-1. The southernmost of these two, Structure S4W1-1, would have been located on the west side of the causeway if the roadway originally ended/began near the acropolis. An unmapped structure and saskabera have been observed east of this structure and it may be hypothesized that the causeway to Xquerol originally ran between these two mounds (Flores and Normark 2004b:58).

The Eastern Acropolis

The Eastern Acropolis is an arrangement of six range structures and a pyramidal structure surrounding a large interior plaza (figure 35). The interior plaza measures roughly 60 x 60 meters, and the whole acropolis measures at least 140 x 140 meters, with its basal platform elevated between 1 and 2 meters above the surrounding topography (Flores and Normark 2005a:16).

The pyramidal structure, Structure N2E3-1, appears to have had five levels; four are quite easily detected and there

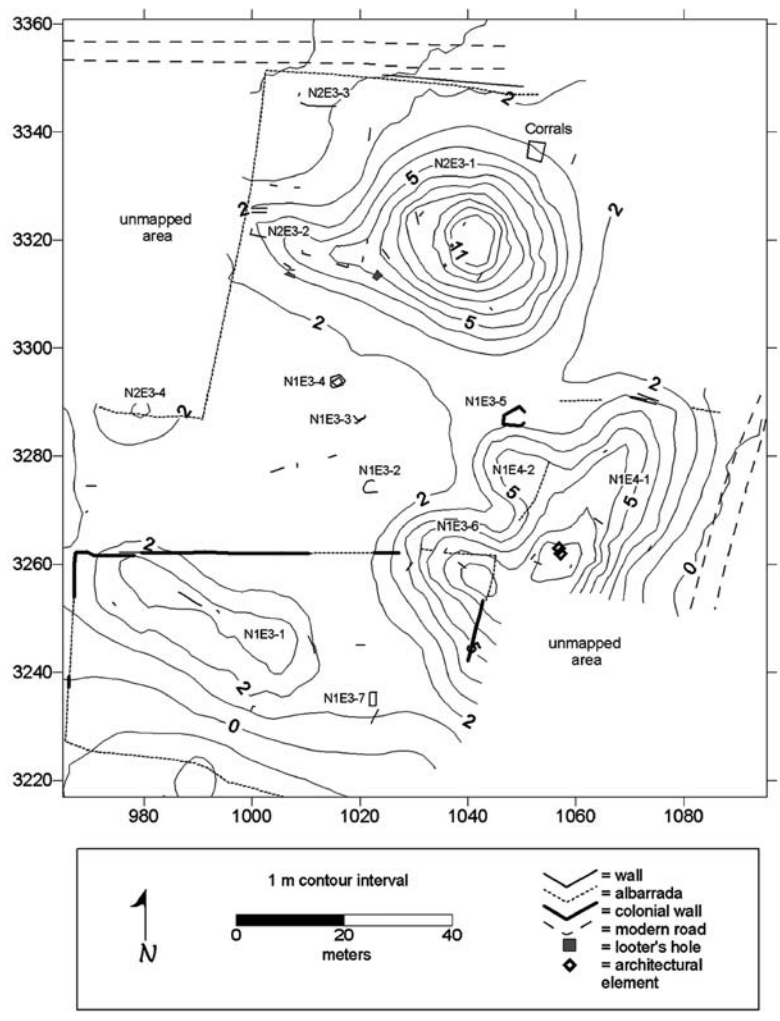


Figure 35. The Eastern Acropolis.

might have been an additional level at the base. The two top levels are most easily seen. Measured from the nearby streets, this is the tallest surviving Prehispanic building at Ichmul, rising almost 12 meters above the streets. Its base measures 45 x 45 meters. The interior walls of the structure have been exposed from heavy looting/quarrying of the structure. Not much in situ architecture from the final construction episode remains intact (ibid:16).

The pyramid is located within a solar. A pit in the solar, located in a flat area northeast of the pyramid, reveals the dry core fill upon which the acropolis rests. This northern extension of the plaza/platform reaches all the way to the street. It has at least two levels, one higher in the east and one lower in the west. A foundation brace was found in this area, Structure N2E3-3 (ibid:16).

West of the pyramid and directly attached to it is a range structure, Structure N2E2-2. Its northern side has been severely ruined; almost half the structure has been removed as construction material. A vaulted room has been exposed, but the vaulted room has, in the past, clearly been longer. The building seems to have been a transverse and tandem structure, containing at least four, but probably six rooms. The west side of Structure N2E2-2 is on a lower level than the vaulted rooms. This area has stairways on both the north and south side, marking an entranceway from the exterior part of the acropolis in the north to the large interior plaza. The interior plaza of the acropolis is higher up than the surrounding part of the acropolis' external plaza (ibid:16-18).

The eastern portion of the Eastern Acropolis has an unusual arrangement of three structures; Structures N1E4-1, N1E4-2 and N1E3-6. These form a pattern similar to a double T or TT. Structure N1E4-1 is a 75 meters long and 6 meters high range structure. Its southeastern portion could not be mapped, but it is heavily destroyed as are much of the northern and eastern parts. These areas face out to a solar and a street, areas from where it is easy to extract construction material from the ruins. In the northern part, some exterior walls are exposed. The central and tallest part of the building has two very large stones lying on its top. They are too large to be lintels; one of them might be a plain stela, and the other is rounded and could possibly be an altar (ibid:18).

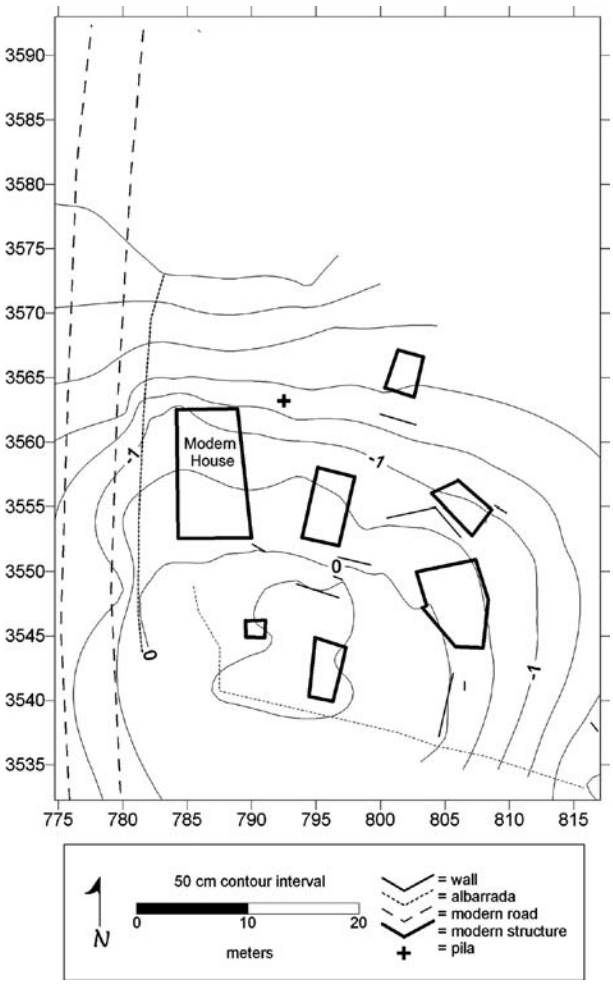


Figure 36. Structure N4E1-1.

Attached to the western part of this long structure are the other two structures. These have an east-west alignment. The northern one, Structure N1E4-2, is lower than the southern one. It lacks any architecture in situ and forms a small plaza with Structure N1E3-6 and N1E4-1. Structure N1E3-6 is even taller than Structure N1E4-1 and has a pyramidal appearance. There might have been a terrace on its top. The western base of Structure N1E3-6 reveals an exposed platform wall (ibid:18).

A high Colonial wall runs up along the southwest side of Structure N1E4-1, makes a turn to the west and runs down a portion of the north side of Structure N1E3-6 and N1E4-1, probably attached to an older terrace wall. The Colonial wall continues to the west until it runs over the northwest corner of the

southernmost range structure of the Eastern Acropolis, Structure N1E3-1. The wall continues slightly to the west before it makes a 90-degree turn to the south. In portions the wall is only an albarrada (ibid:18).

Structure N1E3-1 is a low and extended structure that runs along the whole southern portion of the acropolis. It may have been the foundation for perishable structures. Portions of the structure are taller and there might have been at least three platforms for perishable structures. A partly preserved wall could be seen in the southeast section. An even lower platform, Structure N1E3-7, is attached to the eastern side of this structure (ibid:18).

The western part of the Eastern Acropolis has one unmapped range structure, Structure N2E3-4. It belongs to another solar and the map only extends to the albarrada that separates this structure from the rest of the interior plaza (ibid:18).

The interior plaza has some foundation braces (Structures N1E3-3 and N1E3-2), a double wall line (Structure N1E3-8), and the remains of a possible stela. There is a round small structure in the centre of the plaza, Structure N1E3-4. It also has an interior round wall (ibid: 18).

Compared to the Central Acropolis, the Eastern Acropolis is smaller, but it seems to have a greater variety of buildings. The architecture of the Central Acropolis is more homogeneous. Due to the size of the interior plaza, the Eastern Acropolis could have been a more public area. The Central Acropolis with its smaller, elevated and restricted plazas, may have been private living quarters of the ruling strata of Ichmul. However, accessibility to plazas is usually based upon assumptions that a large plaza would contain more people and thus be public. There is no way to know how accessible these "open areas" were (ibid:18-19).

Other locations in central Ichmul

Structure N4E1-1 is located 400 meters north of the Great Plaza (figure 36). The three meters high structure lies in a solar whose present constructions are built from reused Prehispanic cut stones. Some remains of walls are still visible on the surface. It is possible that the modern structures stand on earlier foundation braces. East of the mound are at least two visible terraces that could be the base of a building. The structure continues to the south, but that area could not be mapped. This mound is the northernmost known mound within the limits of the pueblo of Ichmul (Flores and Normark 2005a:20).

Poxil is an area 480 meters northwest of the Great Plaza. It consists of a large platform, N1E1-1 (figure 37). Its size is 40 x 30 x 4 meters. This building is partially built upon a hillock. On the eastern side, near the top, there are still some visible walls that could be steps. On the eastern side of the summit is Structure N1E1-2. It is one meter high and was probably the base for a perishable structure. Surrounding the western and northern sides of the substantial Structure N1E1-1 are albarradas that enclose Colonial period streets. Southeast of this mound is Structure S1E1-1. It is an altar built with well cut megalithic stones. The feature is different from other altars found in the CRAS study

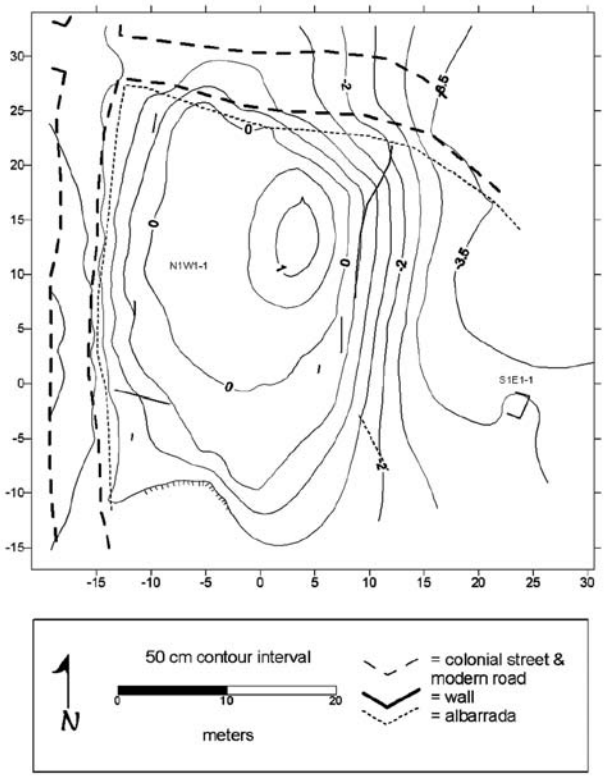


Figure 37. Poxil.

area (ibid:20-24).

There is a 2.5 – 3 meters high unmapped platform called Structure 5 directly east of the street that divides the platform from the rest of the Central Acropolis. A high Colonial wall runs along its western side but the platform is probably Prehispanic. If the San Andres causeway is traced further to the northwest from where it ends today, this platform would have blocked its route if it was older than the causeway. Perhaps the platform and its potential plaza to the south was the starting/ending point of the causeway (ibid).

The historic and now abandoned portions of the old road to Peto could potentially have been built upon an even older causeway that would have run west of Ichmul. The alignment of the road could be seen for about 100 meters. It is not clear if it kept the same direction into Ichmul beyond this point, but if it did and was an old causeway it might have lined up with an area 100 meters south of Structure N4E1-1. This would break the pattern of the other causeways that aim toward the Great Plaza or the Central Acropolis (ibid:19).

Sites in 'peripheral' Ichmul not connected by causeways

Xmakabha means "no name" and refers in this case to a place surrounding a deep vertical cave that was not entered by project members. Some nearby mounds were found. Surface collection was undertaken on one structure that had what appears to be a Postclassic altar. Some ceramics date to the Late Classic, which is a poorly defined period in central Ichmul. However, there were primarily Terminal Classic sherds at the site. This site is about 3.5 kilometers southeast of the Great Plaza in Ichmul. Xbequil lies roughly 2.6 kilometers southeast of the Great Plaza and it is close to San Pedro (Chan Ichmul). This site has a Colonial occupation and at least one Prehispanic mound. Surface collections suggest a strong Late Formative settlement. Roughly 1.5 kilometers northwest of Ichmul's centre is a 3.5 meters high mound. It has been labelled Chikin Ichmul (Western Ichmul). It is the only known settlement to the west that is near central Ichmul (Flores and Normark 2005a; Johnstone 2006).

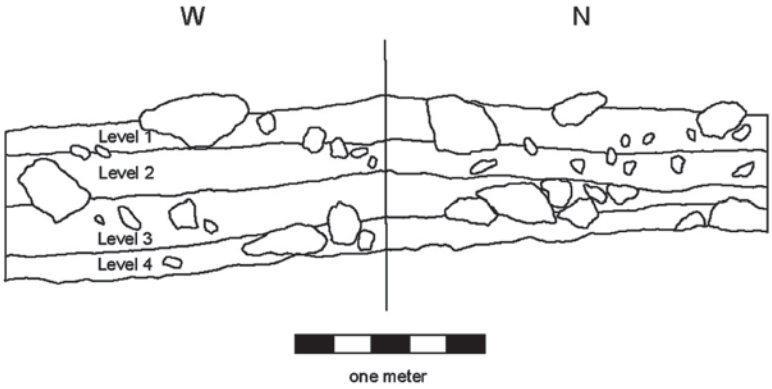


Figure 38. Operation 1 at Ichmul.

Operation 1

The purpose of this 2 x 2 meters test pit located 450 meters south of the Central Acropolis (see chapter 4.2.5.) was to investigate the terminus plaza of the Ichmul-Xquerol causeway in Ichmul (figure 38). Since the survey could not find the original terminus for the causeway, this test pit had to be placed where the final sections of the road could be detected. However, there was only bedrock at that location, so the excavation unit was placed beside the causeway, in a possible plaza area in the corner of the intersection between the small pyramidal Structure S7W2-1 and the causeway. The aim was to obtain a sealed lot that could date the nearby causeway. The unit was oriented along the alignment of the causeway and was excavated following strata. Since a sealed context was not discovered, there is no confirmed relative date from this test pit. Most of the content in the pit came from collapsed debris from the pyramid and the causeway. The ceramics ranges from the Middle Formative (Chunhinta Black) to the Postclassic (Chen Mul). A tentative Terminal Classic date is postulated for this architectural feature (Flores and Normark 2004a).

Operation 2

This 2 x 2 meters test pit was positioned in Plaza 2 in the Central Acropolis, close to the base of the collapsed material of Structure S2W1-3 (figure 39). The excavations indicate that there were activities in the area during the Late Formative, since Sierra Red sherds were found in Level 6, the lowest level. However, these sherds were mixed with Early Classic sherds. In the beginning of the Early Classic, a thin floor (Floor 4) was laid on top of bedrock and *chac luum* (red soil). Floor 4 lacks a subfloor and it could have been the surface of what later became the Great Plaza. The floor appears to have been badly maintained. Later in the Early Classic, the plaza was raised one m to form Floor 3. Level 5 consists of this construction episode. Level 5, Lot 1 was Floor 2, which was a maintenance of Floor 3. This took place during the Early Classic as well. Some Terminal Classic sherds were found in Level 5, Lot 5, but they probably derive from an admixture of sherds from the unstable dry core fill above. The plaza was raised by medium-sized stones and pebbles to form Floor 1 which dates to the Terminal Classic (Level 3, Lot 1). This floor may have been constructed when the surrounding structures were made. A period of natural deposition of organic debris and some collapsed material followed. There is a possible occupational surface in the interface between Level 2, Lot 3 and Level 2, Lot 2. The ceramics here date to the Terminal Classic (Flores 2005).

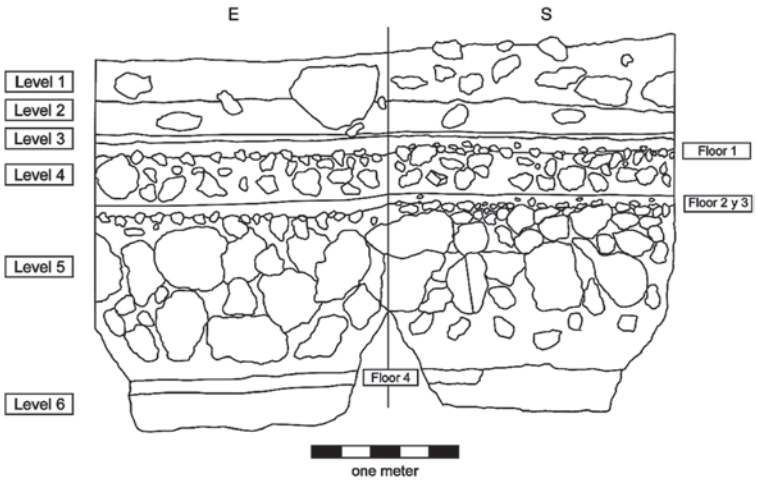


Figure 39. Operation 2 at Ichmul.

Operation 3

This 2 x 2 meters test pit is the most complex of all test pits excavated in the Cochuah region so far (figure 40). It was laid out in the platform upon which the eastern church complex sits. The triadic causeways seem to have converged in the area northwest of where the test pit was located. Thus, the purpose of this test pit was to see if the platform was Prehispanic or Colonial (Kaeding and Flores 2005:32).

The poorly preserved Floor 1 was found in Level 2. Two areas with different types of soils were located in the southern half of the unit. These were surrounded by rings of rocks believed to be postholes (Features 1 and 2). Feature 1 (Level 3, Lot 2) continued 0.37 meters down and ended in rocks. Feature 2 (Level 3, Lot 3) ended 0.47 meters down in a hard grey layer (ibid:34).

Level 4, Lot 1 had two square cut stones and decorated stucco, maybe the remains of a plaster mask with an ear flare. This level is believed to be construction fill or a collapsed wall. Another posthole (feature 3) was located in Level 5 and in the northern half of the unit. It continued a little deeper than Feature 2 and ended in the same hard grey layer. The ceramics from Feature 3 were Formative Sierra Red, Early Classic Balanza Black, Terminal Classic Yokat Striated and Muna Slate. The badly preserved Floor 2 was located in Level 6. Floor 3 was a thin plaster floor, excavated as Level 7 (ibid:36-37).

The southeast corner of the unit, an area not covered by Floor 3, contained human bones (a humerus and a left femur) from an intrusive burial (Burial 1) (figure 41). These were not part of an articulated extended burial since the femur was found on top of the humerus. The burial had also cut through the well preserved plastered Floor 4 (Level 8, Lot 1) (ibid). Johnstone's (2006:19) analysis of the burial indicates that it was covered by Floor 1, which was associated with the

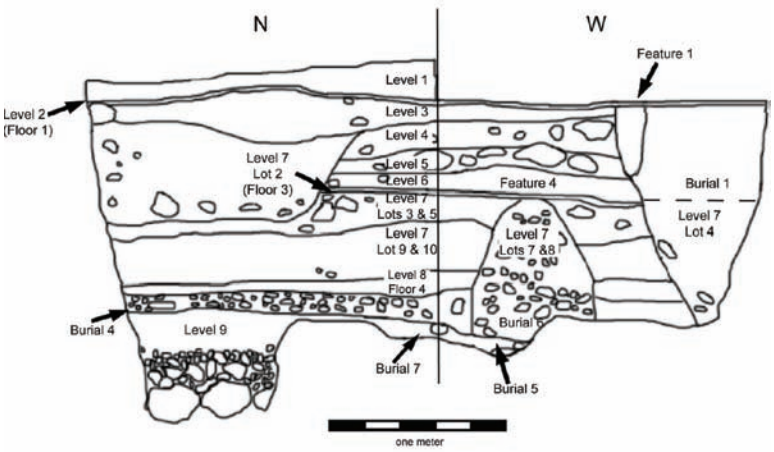


Figure 40. Operation 3 at Ichmul.

postholes, and dates minimally to the Postclassic period, but could possibly be Colonial, although no post-contact artefacts were found. It appears to be the bones of a male.

More human bones were encountered in Level 7, Lot 10. East of a central rock feature, the bones of two feet were located (Burial 2). Burial 2 was encircled by the rock feature. It was the only complete burial found within the test pit. Burial 2 was cut from Floor 3 and penetrated Floor 4 (figure 42). Since Floor 3 lies below Terminal Classic collapse debris, the burial is also from the Terminal Classic. It contains a female of roughly 17 years of age. Her teeth were filed to points (Johnstone 2006:19). Above the torso of Burial 2, two other human legs were found (Burial 3). This burial extended into the west wall of the unit (Kaeding and Flores 2005:37). Burial 3 was also interred from Floor 3 and it penetrated almost down to Floor 4. It partially covers Burial 2. The bones indicate an age of less than eleven years (Johnstone 2006:20).

In Level 8, Lot 1, four other human burials were located. These burials were also interred in an extended position (Ruz Lhuillier 2005:85-87, 156). A human femur was located in the northwest corner (Burial 4) (Kaeding and Flores 2005:38). This burial was sealed by Floor 4 and contained a male greater than 22 years of age (Johnstone 2006:22).

Further to the east, there was a second human skull (Burial 5). The parts below the pelvis of Burial 5 continued beyond the east wall of the test pit (Kaeding and Flores 2005:38). Burial 5 appears to have been buried when Floor 4 was constructed. It contained a female between 21 and 35 years of age (Johnstone 2006:22).

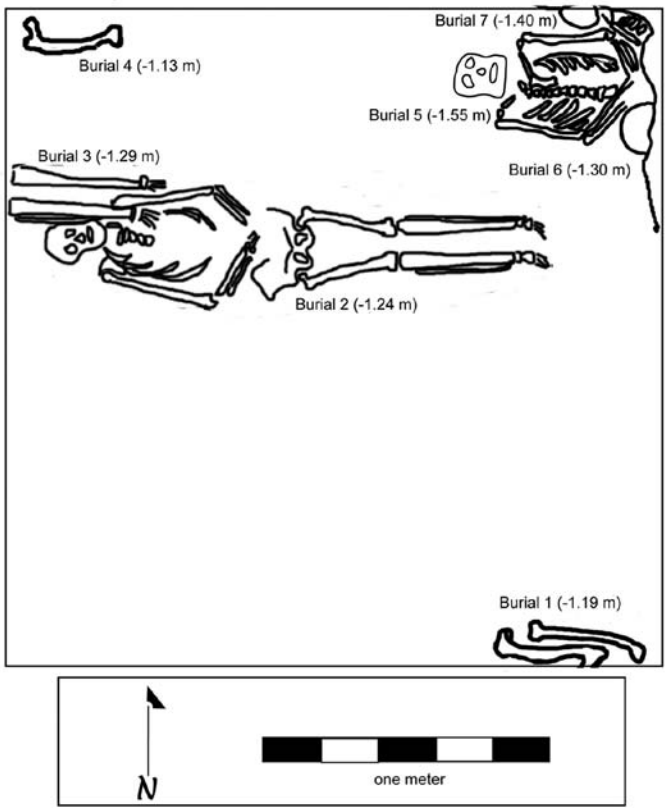


Figure 41. Burials 1-7.

When Burial 5 was excavated, two more skulls were revealed (Burials 6 and 7). Burial 6 was found above and south of the pelvis of Burial 5 (Kaeding and Flores 2005:38). It is an intrusive burial, covered by Floor 3. The estimated age of the interred person is 5 +/- 1.5 years (Johnstone 2006:23).

Burial 7 was located north of Burial 5 and at the same depth. Both burials 5 and 7 appear to have been part of Floor 4. Thus, they were buried when the floor was constructed (Kaeding and Flores 2005:38). Burial 7 appears to contain an infant between 2.5 and 3.5 years of age (Johnstone 2006:23).

Floor 4 (Level 8, Lot 1) had a

0.25 meter thick layer of saskab. Beneath it was Level 9, Lot 1, which consisted of a dry-core fill which continued at least one m below the contemporary Great Plaza. However, it seems that the platform is built on an earlier plaza floor (ibid). Maybe the Great Plaza once extended all the way to the Eastern Acropolis. The test pit was never excavated down to bedrock due to time constraints.

Figure 42. Burial 2 at Ichmul.

Ceramics from Levels 2-9 indicate a Terminal Classic construction for the floors. Despite the fact that the platform is in the centre of the Colonial cabacera, the Colonial remains were few. Apart from Burial 1, Colonial ceramics were only found in Level 1. These ceramics were modest and of local utilitarian wares quite like the ones used before the Spanish contact. Four small sherds of tin-glazed *majolicas* were the only imported European ceramics. Several metal artefacts were found. One of them may have been a serpentine for a matchlock (Deagan 2002:273). This could relate to the Caste War in which Colonial period architecture was destroyed (Kaeding and Flores 2005). The lack of Colonial burials is surprising since the grounds surrounding Colonial churches usually were favoured burial sites during this period (Graham, et al. 1989:1255; Restall 1997:155-158).

All burials, except Burial 1, were extended and supine. They were laid out in an east-west axis, with the head in the west (Kaeding and Flores 2005:40-42). No burial had any deposited grave goods. The sherds found in the burials seem to have been construction fill. Simple burials, like the six Terminal Classic ones, are often found in substructural platforms like the area appears to be (Ruz 2005:156). Such burials are often found beneath house floors. Although there are traces of three postholes above the burials, only Feature 3 could have been associated with the burials since the other two protruded from a higher level. Buildings with posts could possibly be related to "high status", but the burials lack any trace of this (ibid:44).

4.2.2. San Cristobal

This is the shortest of Ichmul's causeways. It is 910 meters long in its current state, 6.5 meters wide and has an average height of 0.5 meter. It runs northeast from Ichmul, approximately 18 degrees east of north. Like the other causeways, its original starting point in Ichmul is not known due to later settlement that has used the causeway as a source for construction material (Flores and Normark 2005d).

From the top of the pyramid at San Cristobal (Structure N1W1-1), the white church in Ichmul can be seen in alignment with the causeway. However, if the alignment of the causeway is traced to the south of its current origin point in Ichmul, it does not connect with the triadic causeways and bypasses the churches. It passes just slightly west of the church area, 40 meters from the intersection of the triadic causeways. It would also have passed 50 meters east of Structure N4E1-1. The causeway may have originated in the north-eastern corner of the Great Plaza near where the L-shaped church is. If so, it would have been 1,310 meters long. It is not likely that it crossed the Great Plaza, but if it did and thus were older than the Great Plaza, it could not have gone further than the Central Acropolis (see figure 29) (Flores and Normark 2005d:64).

The site

The final 125 meters of the causeway adjoining the terminus area at San Cristobal was mapped

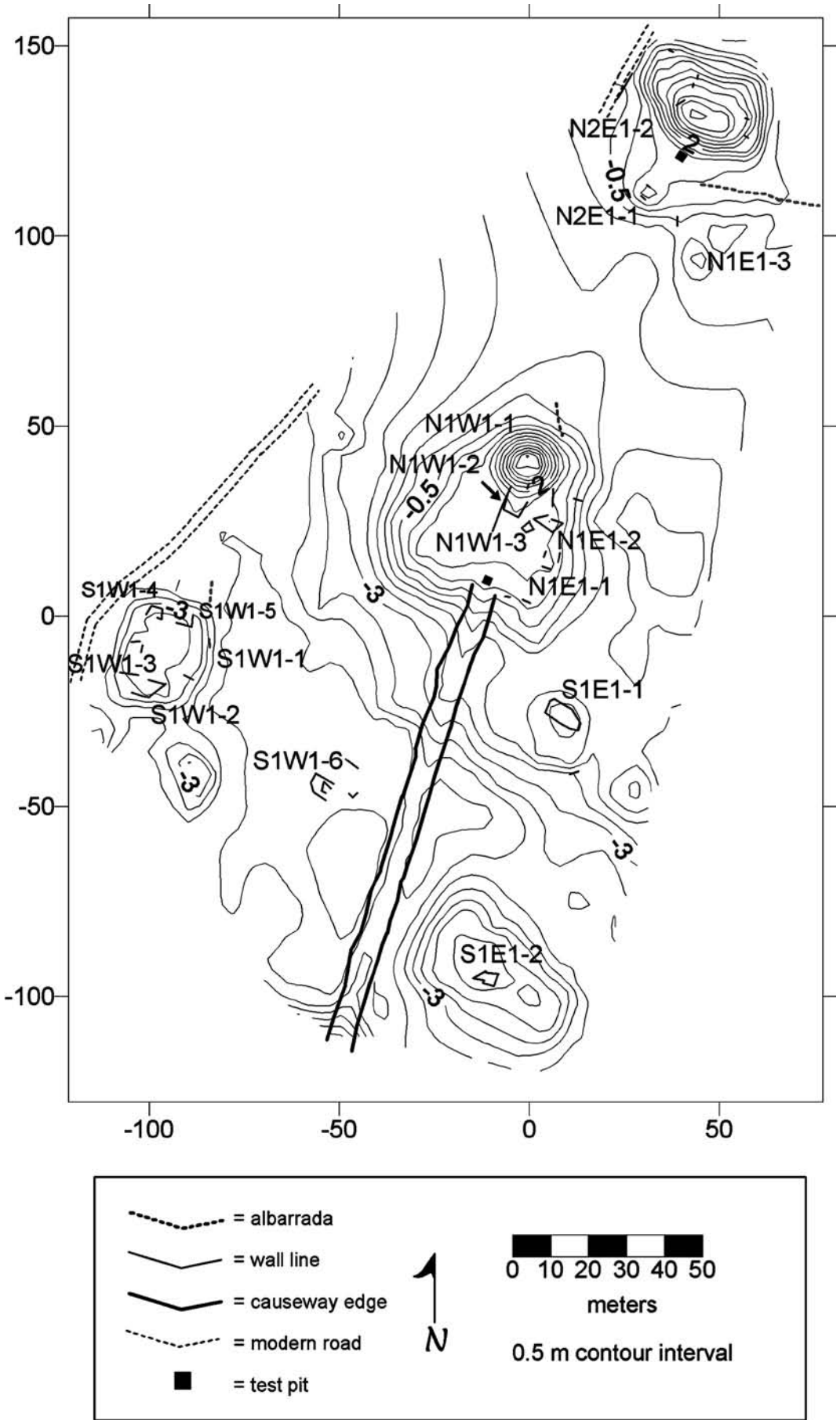


Figure 43. The San Cristobal terminus area.

(figure 43). In San Cristobal, the causeway ends in a rectangular plaza, 30 x 25 meters in area. The plaza is located on top of a natural hillock. The right-angled intersection between the plaza and the causeway suggests that they were constructed at the same time (Flores and Normark 2005d).

Operation 1 at San Cristobal was laid out in the intersection between the causeway and the plaza in order to date them both. As with the other operations in the causeway-plaza intersections, this one did not provide a sealed lot that could give a reliable date. However, a Terminal Classic construction can be postulated since these ceramics (Muna slate) are the most prevalent within the sample and Terminal Classic ceramics were included in the deposit that pre-dates the plaza construction (ibid:61).

The eastern part of the plaza has three structures, Structures N1E1-1, N1E1-2 and N1W1-3. They are all low structures with foundation braces. The first two are most likely shrines and are located upon low platforms. The western and southern parts of the plaza lack any visible structures (ibid:61).

A four meters high pyramid, Structure N1W1-1, dominates the northern edge of the plaza (figure 44). It is in alignment with the causeway and the plaza. There is a looters' hole on its top. In front of the pyramid is a low square mound, Structure N1W1-2. A balustrade on the pyramid runs down the lower part of the pyramid, then partially on Structure N1W1-2 and onto the plaza. East of this balustrade is a shorter balustrade on the pyramid (ibid:61).

Two smaller foundation braces were found on top of two small hillocks east of the causeway, Structures S1E1-1 and S1E1-2. West of the causeway is a wide platform, Structure S1W1-1, measuring 30 x 25 meters. Parts of the original northeast wall have been exposed by a tree fall. The south and west parts of the platform have two clearly visible foundation braces, Structures S1W1-2 and S1W1-3. Less clear are Structures S1W1-4 and S1W1-5, in the northern part of the platform. A small saskabera was found to the south of Structure S1W1-1. East of Structure S1W1-1 is the round Structure S1W1-6, perhaps a small corral or a corncrib (ibid:61-64).

The pyramid, plaza and causeway were most likely part of the same construction episode since the components of this assemblage are aligned with each other. The reason for the construction effort may be that 70 meters northeast of the pyramidal structure is a northern plazuela group. It consists of the substantial Structure N2E1-2 in the north and two lower mounds to the south, Structures N2E1-1 and N2E1-3 (ibid:64).

Structure N2E1-2 is a "winged" structure which has a tall centre and lower platforms on its eastern and western sides. It measures 40 x 25 meters and its central portion is 4 meters high. The structure has traces of having had at least three transverse rooms facing to the south. However, the building was accessed from the north through an inset stairway up onto a terrace behind the vaulted portions of the structure. There are three large looters' holes on the structure (ibid:64).

Figure 44. Structure N1W1-1 at San Cristobal.

Operation 2 at San Cristobal was laid out in front of the southern side of Structure N2E1-2 in order to see if this portion of San Cristobal pre-dated the causeway terminus. The ceramics point to a Terminal Classic date for the construction,

although there were Late Formative and Early Classic samples in a tertiary context as construction fill (ibid:64).

Northwest of San Cristobal is a rancho with unmapped structures. It is possible that the settlement of San Cristobal continues to this rancho. The major structure at San Cristobal, Structure N1E1-2, also faces to the north. There seems to be an older part of the site, judging from ceramics found in Operation 2. This area would have been settled a long time before the causeway was constructed (ibid:64). There are other structures south of San Cristobal as well, such as dispersed mounds in the area between Ichmul and San Cristobal.

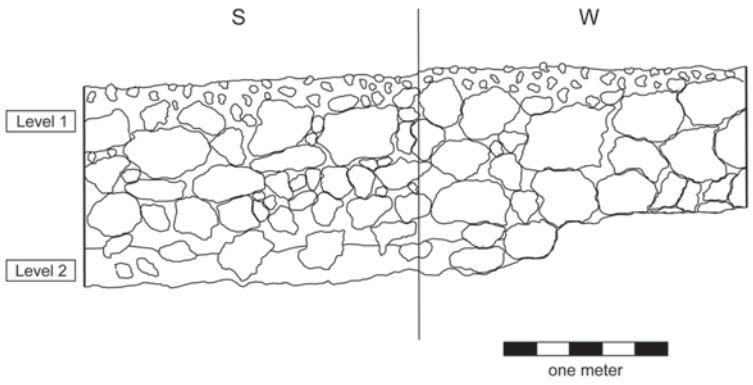


Figure 45. Operation 1 at San Cristobal.

Operation 1

This 2 x 2 meters test pit was located in the intersection between the causeway and the terminus plaza of San Cristobal (figure 45). No sealed lot was encountered. The ceramic sherds in Level 1 were mainly Terminal Classic Muna Slates, with some Formative Sierra Red sherds. The construction of the causeway/ plaza was deposited directly upon chac luum (Level 2, Lot 1) (Huerta 2005c:65).

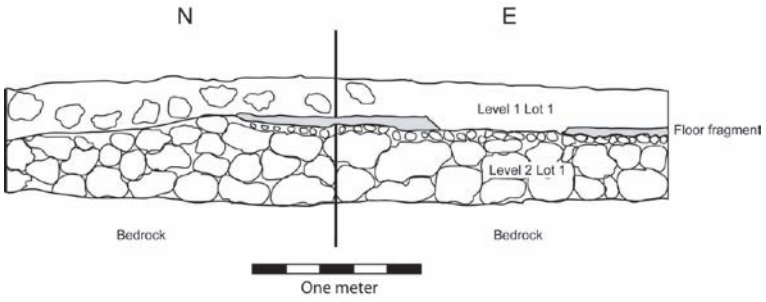


Figure 46. Operation 2 at San Cristobal.

Operation 2

This 2 x 2 meters test pit was placed in a plaza area at the base of Structure N2E1-2 (figure 46). At the bottom of Level 1, Lot 1, traces of a plaster floor was revealed. It could also have been a step or a bench that extended out from Structure N2E1-2. Ceramics collected in Level 2, Lot 1, date mainly to the Terminal Classic (Muna Slates, Teabo Red and Yokat Striated). Some Late Formative Sierra Red sherds were also found. Level 2, Lot 2 consisted of boulders upon bedrock. This lot contained Terminal Classic sherds (Yokat Striated and Muna Slate), Late Formative Sierra Red, Early Classic Xanaba Red and Late Classic Arena Red. Level 2, Lot 1 consisted of material used to level the bench as the fill was found below the plaster. No sealed surface was found, but it appears that the plaza was constructed and used during the Terminal Classic (Huerta 2005d:68-70).

4.2.3. San Pedro (Chan Ichmul)

Based upon the alignment gathered from the GPS survey, this causeway seems to be a branch of the San Andres causeway. This suggests that the San Pedro causeway may be a later construction. Its alignment is 140 degrees east of north from its possible intersection with the San Andres causeway. It is 6 meters wide, only 0.25 meter high on average and 1,100 meters long in its current state. It could have been 1,480 meters long if it intersected with the San Andres causeway. However, the San Pedro causeway could potentially be an earlier road overlaid by the San Andres causeway. If so,

it could have originated near the northeast pyramid (Structure S1E1-1) of the Central Acropolis, making it 1,600 meters long (Flores and Normark 2005f:79).

The possible intersection between the San Pedro/San Andres causeways is close to where the San Andres causeway may have originated near Structure 5. Why was a branch of the larger causeway created so close to its starting point? Perhaps the San Pedro causeway was not, at least originally, a branch. If it is the older of the two, it may have been overlaid by the San Andres causeway and becoming a branch later. Another possibility is that both causeways originated in the same spot, and never intersected. The starting point may have been a large plaza to the east of the Central Acropolis and south of Structure 5, an area that today is within a solar, behind a house along a street (ibid:79).

A modern road cuts the causeway twice. A saskabera has collapsed under the causeway; similar to the one along the San Andres causeway and Sacbe 1 at Yo'okop, but this collapsed area is much smaller (Flores and Normark 2004a).

The site

The site of San Pedro was renamed by the locals between the 2004 and 2005 seasons. Its new name is Chan Ichmul (Little Ichmul). Like San Cristobal, it seems that the causeway and the pyramid, Structure N1E1-1, were part of the same construction episode. The causeway joined an earlier small settlement with Ichmul (figure 47).

The final 120 meters portion of the San Pedro causeway could not be mapped since it lies within a modern agricultural area. This whole area is covered by rows of different plants (maize, tomatoes, chillies, peppers and water melons). Parts of the causeway have been tilled to better facilitate planting (ibid:79).

In contrast to San Cristobal, this causeway does not end in a plaza area; it directly joins the pyramidal Structure N1E1-1 (figure 48). However, the causeway widens slightly at the very end. Directly on top of this terminus, where the causeway meets the pyramid, there is a small round foundation brace, Structure N1E1-2. This unusual arrangement may indicate that the foundation brace is later than the pyramid, since if the foundation brace supported a perishable structure it would have blocked the access to and from the pyramid. However, it could also be contemporaneous, similar to the

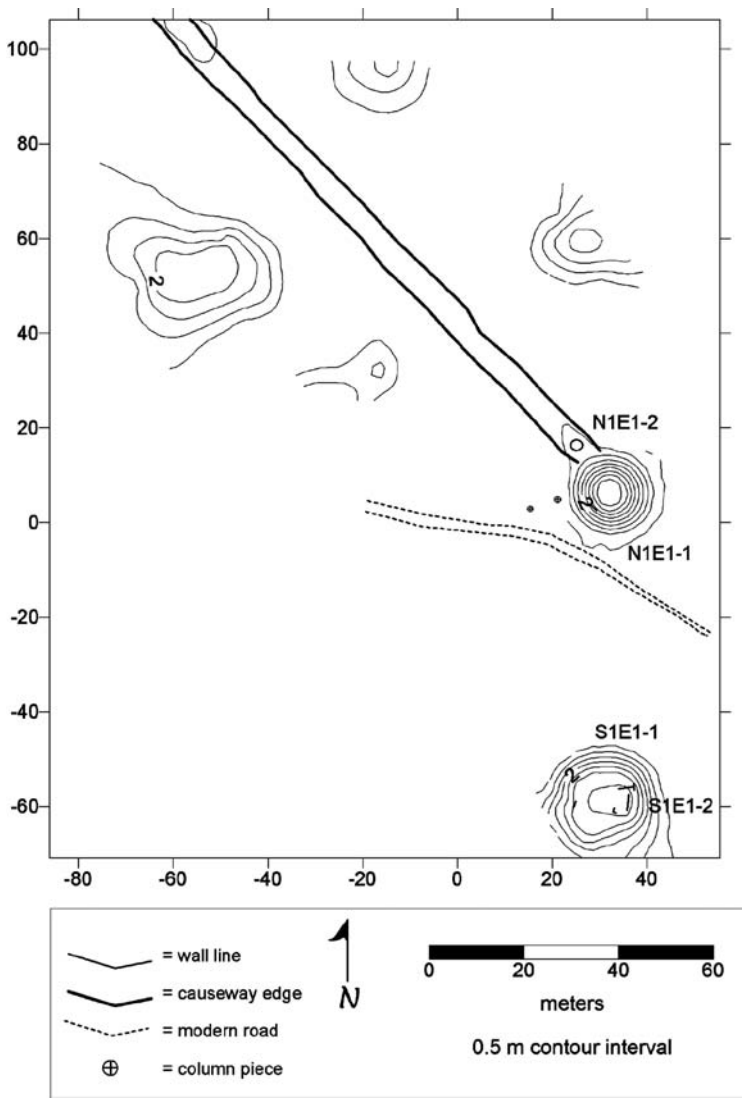


Figure 47. The San Pedro terminus area.

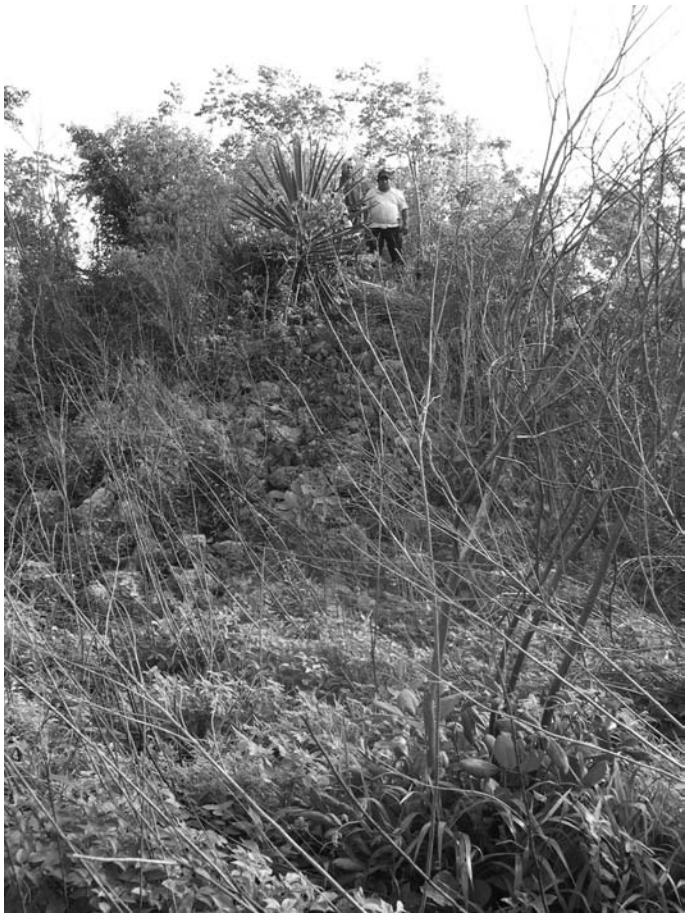


Figure 48. Structure N1E1-1 at San Pedro.

low platform in front of the pyramid at San Cristobal (ibid:79).

The pyramidal Structure N1E1-1 is the smallest of the five principal causeway termini buildings. It is only 3.5 meters high and has only small traces of architecture in situ. No stairs could be seen, but the general alignment of the structure seems to be coordinated with the causeway which is indicated by a very short wall line seen on its western slope. West of the base of the structure are two small column pieces making it likely to be a Terminal Classic structure of the Florescent style (ibid:79-81).

Forty meters south of the pyramid is a three meters high platform, Structure S1E1-1, that has been constructed on top of a hillock. A foundation brace is located on the eastern end of the structure, Structure S1E1-2 (ibid:81).

There was no time for a test pit at the site. Furthermore, only chac luum surrounds the pyramid and there was no plaza in which to put the test pit. An excavation would not have revealed any plaza floors with sealed lots, critical to providing a date that could be firmly associated with building episodes (ibid:81).

4.2.4. San Juan

The causeway to San Juan, in its current state, begins in the eastern outskirts of Ichmul. The origin has been obliterated by Colonial and modern settlement. The causeway may have begun in the Eastern Acropolis, as it would have ended near the pyramidal Structure N2E3-1 if it followed the same course, disregarding other possible mounds in the way that have not yet been encountered or mapped. There is an exterior plaza of the Eastern Acropolis that may have joined the causeway. The alignment of the causeway is 68 degrees east of north from Ichmul to San Juan. The present length of the causeway is 1,650 meters. It is 13 meters wide and 0.7 meter high on average. If the origin was in the Eastern Acropolis, the causeway would have been 2,730 meters long. The white church in Ichmul can easily be seen from the eastern portion of the largest structure at San Juan, Structure S1E1-1 (Flores and Normark 2005e).

Near where it is believed that the causeway once passed there is a large haltun which may have been used for storing water, and/or for some water-related rituals (figure 14). It may originally have been a quarry filled with water as seen at other sites in the Lowlands (Scarborough 1993). Traces of Colonial period streets, bordered by albarradas, were found where the causeway currently begins in the peripheral parts of Ichmul. Due to the increasing number of albarradas and the diminishing traces of the causeway in this area, it is likely that the causeway was used as a source of building material for these later constructions (Flores and Normark 2004a:84).

Near this area, there is a small extension of the causeway on its southern side, not dissimilar to the one found along the causeway to Xquerol (Structure N13E4-1), but it does not have an

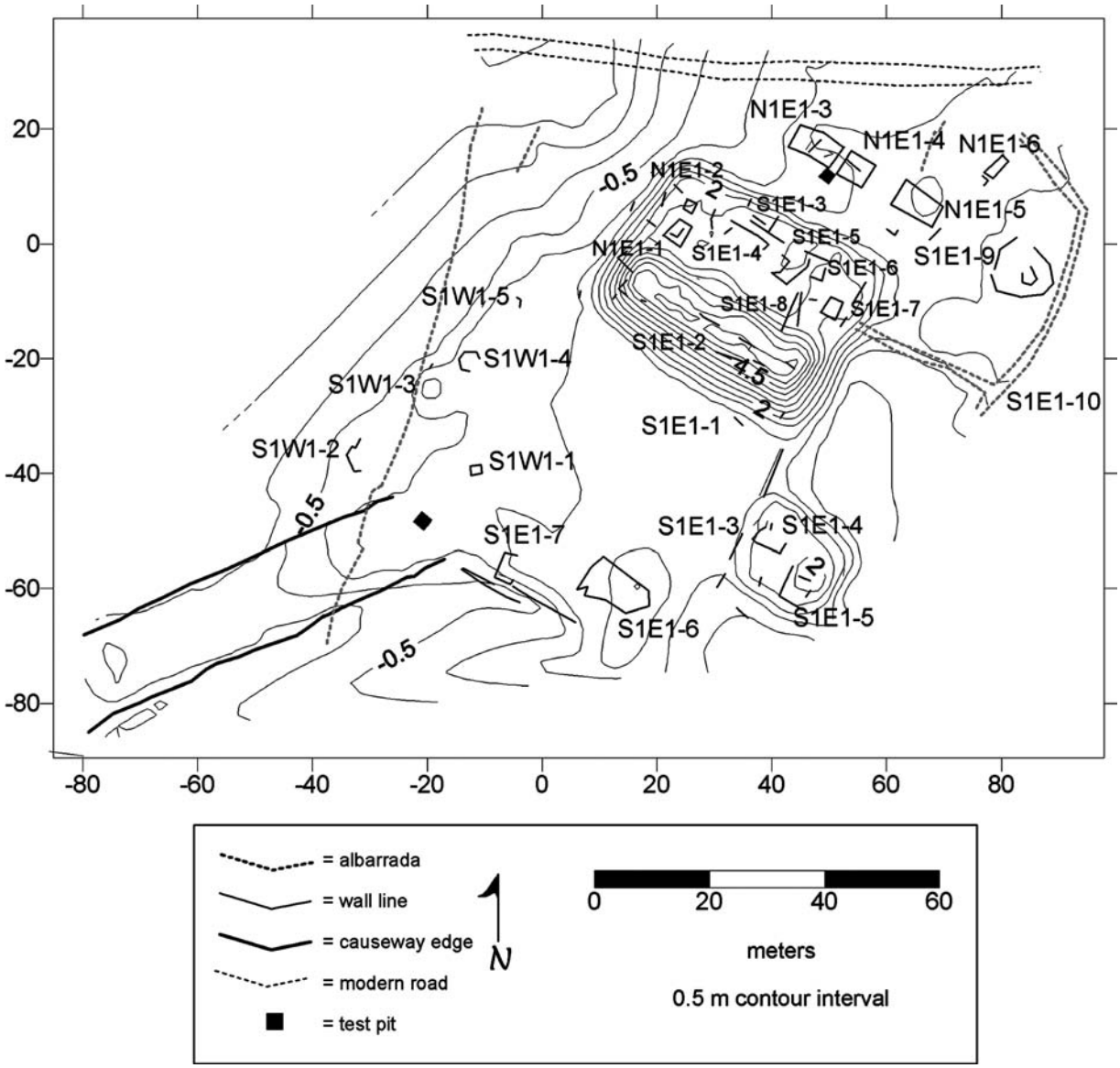


Figure 49. The San Juan terminus area.

apsidal form. Several saskaberas were located along the causeway. The modern paved road between Ichmul and Chikindzonot cuts through the causeway and no traces of the causeway can be found within 40 meters on either side. The causeway has apparently been used as a quarry for constructing the new road (ibid:84).

The site

The final 70 meters of the causeway to San Juan was mapped. The causeway enters the San Juan terminus plaza in its southwest corner (figure 49). The angle between the eastern side of the causeway and the plaza is 125 degrees and not the expected 90 degrees as at San Cristobal. The southwest edge of the plaza is parallel with the alignment of the major structure at the site, Structure S1E1-1. This seems to indicate that Structure S1E1-1 is older than the causeway, as the expectation would be a right angle alignment if they were contemporaneously constructed. This range structure also faces in another direction, to the northeast. Similar patterns have also been found at Xquerol and at San Andres (Flores and Normark 2005e:71).

Operation 1 at San Juan was laid out in the intersection between the causeway and the

Figure 50. Structure S1E1-1 at San Juan.

plaza. This part of the plaza/causeway was dated to the Terminal Classic. The large plaza between the causeway terminus and Structure S1E1-1 measures roughly 45 x 55 meters. This plaza is clearly defined to the northeast and northwest. It flattens out with the terrain in the west and the southeast. It is also clearly defined to the southwest where the causeway ends. Since the southwest edge of the plaza is parallel to the major Structure S1E1-1, the plaza followed established settlement patterns. The plaza may therefore be slightly older than the causeway. It could still be part of the same construction. It is unusual to have a large plaza at the rear side of the largest structure, if it had not been for the construction of the causeway.

Directly east of the causeway terminus there is a small minor foundation brace, Structure S1E1-7, and a small platform, Structure S1E1-6 (ibid:71).

The western part of the plaza has a foundation brace, Structure S1W1-2, and a low mound bordering the plaza edge, Structure S1W1-3. Facing the mound in the eastern part of the plaza there is a larger platform, Structure S1E1-3, upon which two foundation braces are located, Structures S1E1-4 and S1E1-5. Structures S1W1-3 and S1E1-3 are probably contemporaneous with the construction of the causeway and the plaza or slightly later. Together with Structure S1E1-1 to the northeast, they are aligned in a manner similar to a triadic pattern (ibid:71-73).

A double wall, also of Terminal Classic date, is located at the north-eastern edge of the plaza between Structures S1E1-1 and S1E1-3. A later addition on the plaza is a possible Postclassic altar, Structure S1W1-5, west of Structure S1E1-1. There is a nearby circular structure, S1W1-4, which probably is a more recent corncrib (ibid:73).

The major structure at the site, Structure S1E1-1, is situated 50 meters northeast of the causeway-plaza intersection (figure 50). It consists of a large platform, measuring 50 x 35 x 3 meters. In the southern section of the platform is a transverse vaulted range structure, Structure S1E1-2. The southern section of the vaulted structure is taller than the northern part, indicating that this was the rear wall of the structure. It is 6 meters high relative to the nearby plaza. The vaults have all collapsed but there were originally three entrances from the north. Some of the foundation walls in the interior front are still visible. Two small interior dividing walls could be seen, one in the eastern part and one in the western part of the structure, indicating that there were five rooms, but only three entrances. The middle doorway has a broader entrance terrace, most likely a stairway (ibid:73).

The lower part of the platform in front of the range structure contains many foundation braces for perishable structures and smaller platforms. In the western section of this platform there is a small mound, perhaps a shrine, Structure N1E1-1. An even smaller structure, Structure N1E1-2, is located in the northwest corner of Structure S1E1-1. Structure S1E1-3 has a double wall, which is divided into two rooms. Traces of a small foundation brace was found south of this double wall, Structure S1E1-4. Structure S1E1-5 is an oddly shaped foundation brace. Structure

S1E1-6 is a small platform. Structure S1E1-7 consists of the foundation brace to what might have been a Postclassic shrine. Structure S1E1-8 has two small platform walls running semi-parallel. There is a stairway on the northern slope of the platform. It has a balustrade leading down to the area north of the platform (ibid:73).

The cluster of these eight small structures on the northern part of Structure S1E1-1 are most likely not all contemporary with the vaulted structure. Some of them might have been used at the same time as the range structure, but the area would have been problematic to pass through if they all were contemporaneous. Some of the structures could be associated with a late Terminal Classic or Postclassic occupation. The structures may also relate to the smaller structures just below and north of Structure S1E1-1 (ibid:73).

North of the large platform are some foundation braces with divided rooms. Operation 2 at San Juan was laid out just south of the passage between two of these structures, Structures N1E1-3 and N1E1-4. Terminal Classic ceramics were found but also older ceramics with Late Formative, Early Classic and Late Classic dates. This indicates a longer occupation of the general area, but not of the nearby houses. Other foundation braces, Structures N1E1-5, N1E1-6 and S1E1-9, are located further to the east. The last one is round and has an internal foundation brace (ibid:73).

The presence of structures just north of Structure S1E1-1 is unexpected, as this would have been an older "plaza" area (although no formal plaza floor was found in Operation 2). If the structures bordered a northern "plaza" edge, then the "plaza" would have been very small and narrow. The "plaza" area does have bedrock visible near the base of the large platform, but this does not rule out its function as an open area in front of such a large structure. The other option is that the structures are later Terminal Classic or Postclassic additions (ibid:73-74).

There is one interesting feature that indicates that the reason for the clustering of structures in a possible open area and on the platform is unusual and late. On the eastern side of Structure S1E1-1 is a long and broad double wall of large stones, Structure S1E1-10. It runs like a semi-crescent. It begins partially on the eastern slope of Structure S1E1-1. It may have been the foundation of a palisade. The uncut stones are roughly 1 x 1 meter in size. Traces of this construction may also be seen west of Structure S1E1-1. The structures to the north of the large platform are bounded by this wall. Its function is unknown, and a defensive purpose cannot be ruled out. Substantial portions of it could have been removed at a later time, or it may have been a primarily perishable palisade. Stones may have been used for the foundations where there was not enough soil (Palka 2001). Moreover, it may never have been finished. The semi-crescent shape indicates that it does not follow an older potential "plaza" layout. The southern part of the palisade is also located on the edge of a slope, which is a more defensible location. Since it begins halfway up the slope of Structure S1E1-1 and does not continue on to the top of the platform, it would not have functioned as an albarrada for cattle. The feature is not similar to albarradas or Caste War fortifications. Colonial and modern albarradas usually have one single line of piled up layers of smaller stones that are easy to remove since they lie on the surface. Caste War fortifications known from Ichmul consist of large cut stones piled up to almost two meters in height and these are in some cases over a meter thick (Flores and Normark 2005e:74).

Roughly 500 meters northwest of the San Juan terminus area is a Colonial well, a water trough and a rectangular stone. Local informants mention a nearby structure with rooms that has collapsed. This is probably from Colonial time (Flores and Normark 2004a:84).

Approximately 1,600 meters southeast of the San Juan terminus area is a modern rancho called San Martín (figure 27). It has at least two Prehispanic platforms. This area has not yet been surveyed and it is not known if it is connected with San Juan (Flores and Normark 2005e:74).

Operation 1

This 2 x 2 meters test pit was located at the intersection between the causeway and the plaza (figure

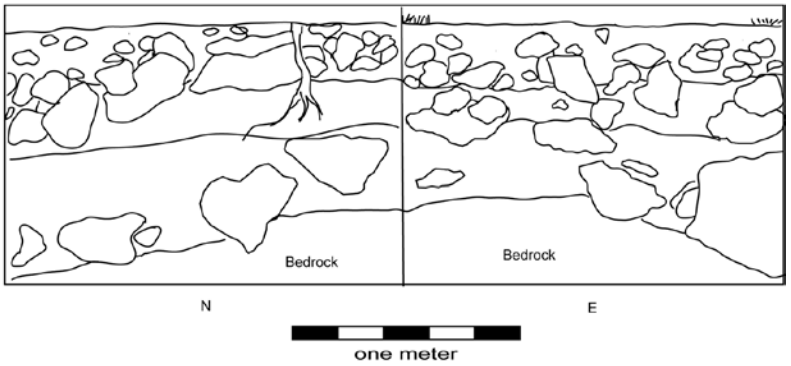


Figure 51. Operation 1 at San Juan.

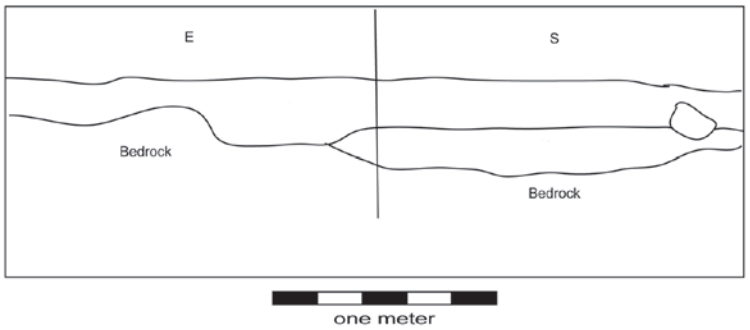


Figure 52. Operation 2 at San Juan.

51). The sherds encountered in this unit were all from the Terminal Classic, primarily Yokat Striated. Chac luum was located 0.70 meter below the surface (Young 2005:76).

Operation 2

This 2 x 2 meters test pit, was located south of Structures N1E1-3 and N1E1-4 (figure 52) that are in front of Structure S1E1-1 and its possible plaza. In Level 1, Lot 1, Terminal Classic ceramics were collected, with a dominance of Yokat striated. Sherds from the Late Formative, Early Classic and Late Classic were also encountered. No plaza floor was encountered. Bedrock was encountered at the depth of 0.35-0.45 meter (ibid:76).

4.2.5. Xquerol

This causeway was first described in the mid-1950s (Stromsvik, et al. 1955:171). Stromsvik and others travelled southward from Ichmul in 1954 and they did not note the causeway until they were more than halfway to Xquerol. They reported that the sidewalls had well-shaped but non-dressed stones that has been set vertically. From this, they dated the causeway to the Late Classic.

The trail between Ichmul and Xquerol has since then become a winding dirt road and it was greatly improved in 2003. The road cuts through the causeway at two points which has made an impact on the causeway. This causeway has perhaps been more disturbed than any of the other causeways of Ichmul since it has modern settlements at either end (Flores and Normark 2004a).

The causeway is 13 meters wide, roughly 0.8 meters high and 2,530 meters long in its current state of preservation. It has an alignment of 193 degrees east of north and runs in a straight line from the outskirts of Ichmul to Xquerol. At some places the causeway is considerably higher (up to three m), particularly at locales where the slope is in a right angle from the course of the causeway. The builders apparently wanted to keep the road bed as levelled as possible. The causeway runs across varied topography; the highest parts being in Ichmul, midway, and at Xquerol (ibid).

Some intact portions of the causeway are fairly well preserved and they show an exterior wall line with 0.6 x 0.8 meter large and roughly cut stones. At no portion of the causeway could an intact surface be found that may have consisted of saskab or plaster, although one saskabera/quarry was located within the first part of the causeway from Ichmul, about 20 meters from the road (ibid).

The possible origins of the causeway in central Ichmul is unknown but if its course is traced to Ichmul it would have ended in the Southern Plaza and southeast of the pyramidal Structure S2W1-3 and directly south of Structure S2E1-8. The first known portion of the causeway near Ichmul is 450 meters south of the Central Acropolis (figure 53). Where the first known portions of the causeway appear, there is also a decrease in the frequency of albarradas. The final portion of the causeway has an albarrada running along its western side. Traces of the causeway begin 30 meters before the causeway bypasses a 5 meters high pyramid, Structure S7W2-1. The pyramid is

heavily looted on its northeastern side. The intersection between the pyramid and the causeway was chosen for a test pit. Operation 1 only revealed mixed lots with ceramics from the Middle Formative to the Terminal Classic. It was not possible to see if the causeway and the pyramid are separated or if they overlap. However, the alignment of the pyramid, whose axis follows that of the causeway, suggests that it was a later addition to the causeway, rather than a pre-existing structure. Approximately 40 meters northwest of this intersection is a platform with two lower structures on its top, Structure S7W2-1 and Structure S7W2-2 (ibid:75). A saskabera is located near this platform.

About 150 meters southwest of the pyramid is a platform, Structure N25E6-1, measuring 30 x 30 meters in extent, located near a sheep farm which is partially situated on the causeway. There is a mound 90 meters west of the causeway which so far is the only known structure near the causeway, apart from the current terminus area (ibid).

Roughly halfway between Ichmul and Xquerol, 1,275 meters northeast of Structure N1E1-1 in Xquerol, on one of the highest hills the causeway crosses, there is an apsidal platform extension on the eastern side of the causeway, Structure N13E4-1. This part of the causeway is also one of the highest; it is more than three meters high on the western side (ibid).

About 650 meters northeast of Structure N1E1-1 in Xquerol, there appear to have been steps on the western side of the causeway. However, these might just as well have been part of a terraced construction technique in a particularly high and well preserved section of the causeway, since the height is roughly two meters on the western side (ibid). A nine meters long step has been found on the eastern edge of the present terminus of the causeway in Xquerol (Shaw 2003b).

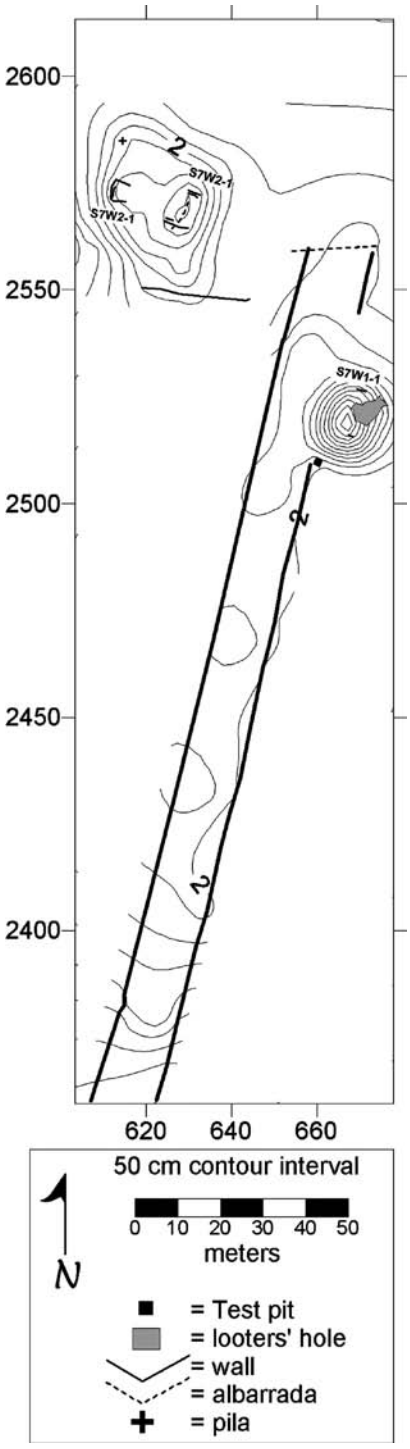


Figure 53. The "northern" terminus area of the Ichmul-Xquerol causeway.

The site

The alignment of the causeway indicates a terminus near Structure N1E1-1 in Xquerol (figure 54). Only chac luum has been found in the area between where the causeway ends today and the pyramid. There are no traces of chich or other components of a causeway or a plaza. However, experience from San Andres (see next chapter) suggests that a plaza may exist under the chac luum. The causeway most likely ended in a relatively open plaza area. Knowledge from the surveys around the other termini of Ichmul's causeways, that do not have modern settlement that complicates the picture, strongly suggests that a plaza area existed between the causeway and the pyramid.

Xquerol is dominated by Structure N1E1-1 which is found directly north of a Catholic church and northeast of Xquerol's modern plaza (figure 55). This nine meters high pyramid has been severely damaged by four holes made by looters. However, it was possible to locate what remained of a south-facing stairway, a superstructure on the rear northern

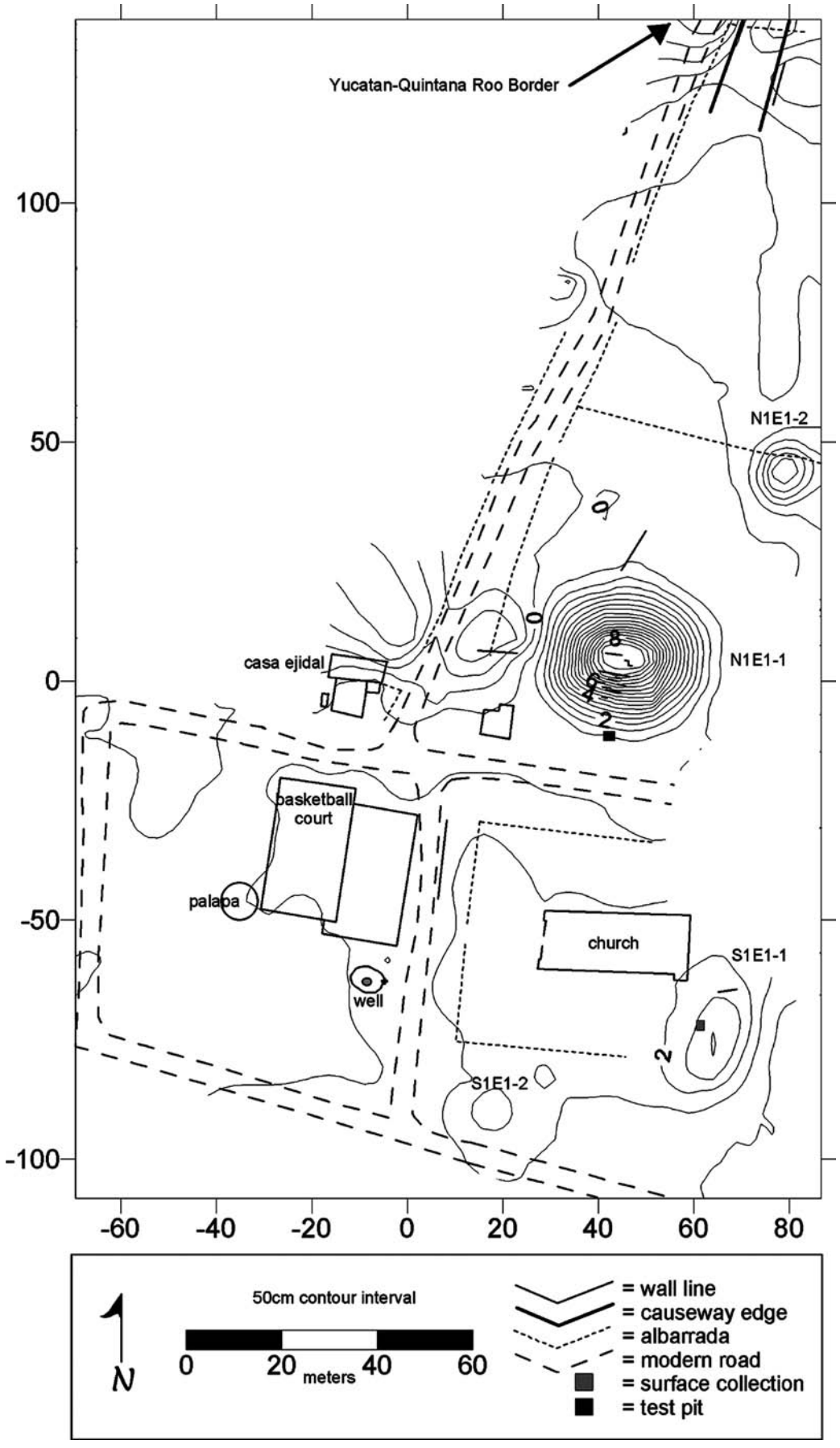


Figure 54. The Xquerol terminus area.

side of the top, as well as a ramp or a platform that extended roughly five meters from the northern edge of the pyramid (Shaw 2003b). Architectural features, such as high concentrations of stucco visible on the surface of Structure N1E1-1, suggests a Late Formative or Early Classic date, as stucco thickness generally declined through time until the Postclassic. The stone masonry of Structure N1E1-1 consisted of well cut and faced veneer stones laid out in well defined courses, this suggests a Terminal Classic date for the most recent phase of construction visible on the surface (ibid).

Figure 55. Structure N1E1-1 at Xquerol.

In Operation 1, south of N1E1-1, two construction phases of the southern plaza were discovered. These were dated to the Late Formative and Terminal Classic (Normark 2003b). Judging from the ceramics alone, it is impossible to say if the first phase of Structure N1E1-1 was Late Formative or Terminal Classic in date.

Northeast of Structure N1E1-1 is Structure N1E1-2, a 2.5 meter high structure lacking any architectural features on the surface. There is an albarrada that divides two solares and a pig feeding area near the mound. This albarrada may follow a past plaza edge. It is at least parallel with the northern alignment of Structure N1E1-1. The intersection angle between the causeway and the possible plaza would have been 80 degrees. This means that it is not the expected 90 degrees. Following the triadic pattern known from San Juan and San Andres, the western structure would have been where the road passes today or under a nearby house. The plaza would have measured roughly 50 x 30 meters.

A large underground saskabera lies directly southwest of the pyramidal structure, extending under a nearby modern house situated south of the pyramid. No ancient artefacts were encountered inside the saskabera since it is used as a modern garbage dump and as an outlet for the drain of the house. This saskabera was probably formed when people extracted saskab for stucco that still covers part of the pyramid (Shaw 2003b).

Structure S1E1-1 is located between the Colonial church and a modern school. Only one wall line is intact on its northern side. A cistern and an outhouse have been constructed on the eastern side of the mound. Terminal Classic and Postclassic ceramics were surface collected on the western side of this structure. Directly south of N1E1-1 are the heavily disturbed remains of Structure S1E1-2. It has no intact architectural remains (ibid).

Operation 1

This 2 x 2 meters test pit was laid out along the southern side of Structure N1E1-1 (figure56). The aim was to investigate the chronology of the south plaza and to get an approximate date of the structure. Ceramic sherds from the Middle Formative to the Postclassic were found. Most of them come from the Late Formative and Terminal Classic (Johnstone 2003a). Floor 1 in Level 3 was poorly preserved. Most of the ceramics were Late Formative (Sierra Red) but they were probably

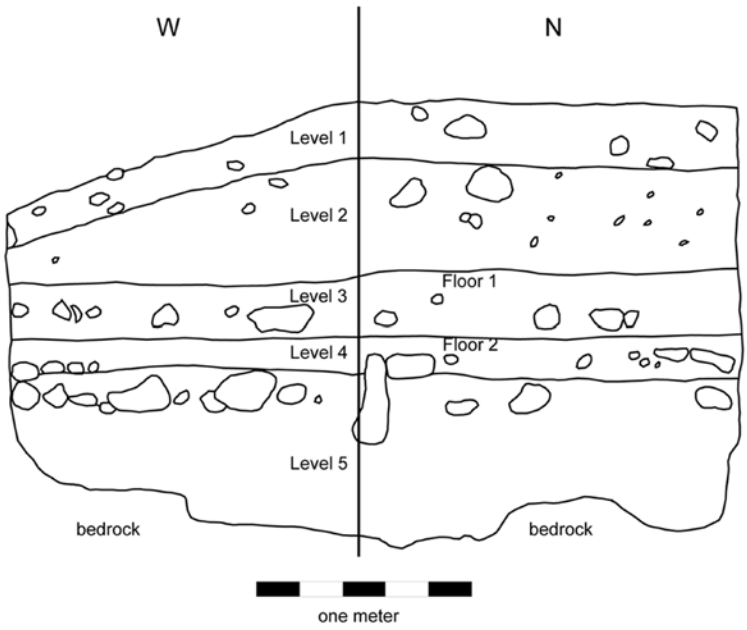


Figure 56. Operation 1 at Xquerol.

the remains of a Late Formative midden used for construction fill. Judging from the other larger concentration of ceramics (Muna Slate and Yokat Striated), the floor was of Terminal Classic date. Below the subfloor fill of Floor 1 was a far better preserved plastered floor (Floor 2). There were indications that Floor 2 had been burnt, maybe by an incensario since the floor had not cracked. Below the subfloor fill of marl there was a dry core fill that had been partially stuck into the chac luum. Middle Formative ceramics such as Dzudzuquil Cream to Buff and Late Formative Sierra Red dominated Level 4 and its two lots. The inclusion of three Terminal Classic Muna Slate sherds in this level can be explained by post-depositional processes (Normark 2003b).

4.2.6. San Andres

The second causeway at Ichmul to be recorded by archaeologists was found on an aerial photograph. Survey on the ground after additional information from the people of Ichmul located this causeway. The causeway ends at the southern part of the ejido of Ichmul, at San Andres, one kilometer northwest of Nohcacab in the ejido of Xquerol (Flores and Normark 2004a:81).

The causeway is 2,640 meters long in its current state, 13 meters wide and 0.7 meter high on average. The white church, the Central Acropolis, and the Eastern Acropolis in Ichmul can easily be seen from the largest structures at San Andres. The causeway probably originated south of a large unmapped platform, Structure 5, that lies east of the pyramidal Structure S1E1-1 in Ichmul. If so, the causeway could not have been longer than 2,940 meters (Flores and Normark 2005c:45).

Today, the causeway begins in a solar in central Ichmul. About 160 meters along the preserved part of the causeway from Ichmul, there is a large saskabera 20 meters west of the causeway. Further south, an interesting feature lies about 330 meters southeast from the present origin of the causeway in Ichmul. A long saskabera that once ran east-west for about 60 meters has collapsed and the overlaying causeway has collapsed with it, exposing a profile of the causeway (figure 3). Parts of the saskabera are still preserved (figure 6). Local informants mentioned that a few years ago there was a plan to construct a modern dirt road on top of the causeway. Once the workers surveying the causeway reached the collapsed area the plans were halted since filling the cut would have required substantial amounts of material, not available (Flores and Normark 2004a:81). A similar collapsed saskabera and causeway has been found along Sacbe 1 at Yo'okop (Shaw, et al. 2000). Shaw (in preparation-a) believes Sacbe 1 had a construction that spanned the hole, maybe by tree trunks. However, since the San Andres saskabera was very large, with no other structures nearby that would have been the target for mining the saskab, I assume that the saskabera collapse post-dates the construction of the causeway. The hole would probably have been filled if it pre-existed. Cobos and Winemiller (2001:285) mention a similar collapsed saskabera along Causeway 14 at Chichen Itza. The area surrounding the cut of the San Andres causeway is today a milpa/rancho and the lack of vegetation made it possible to view construction details, such as boxes. Such

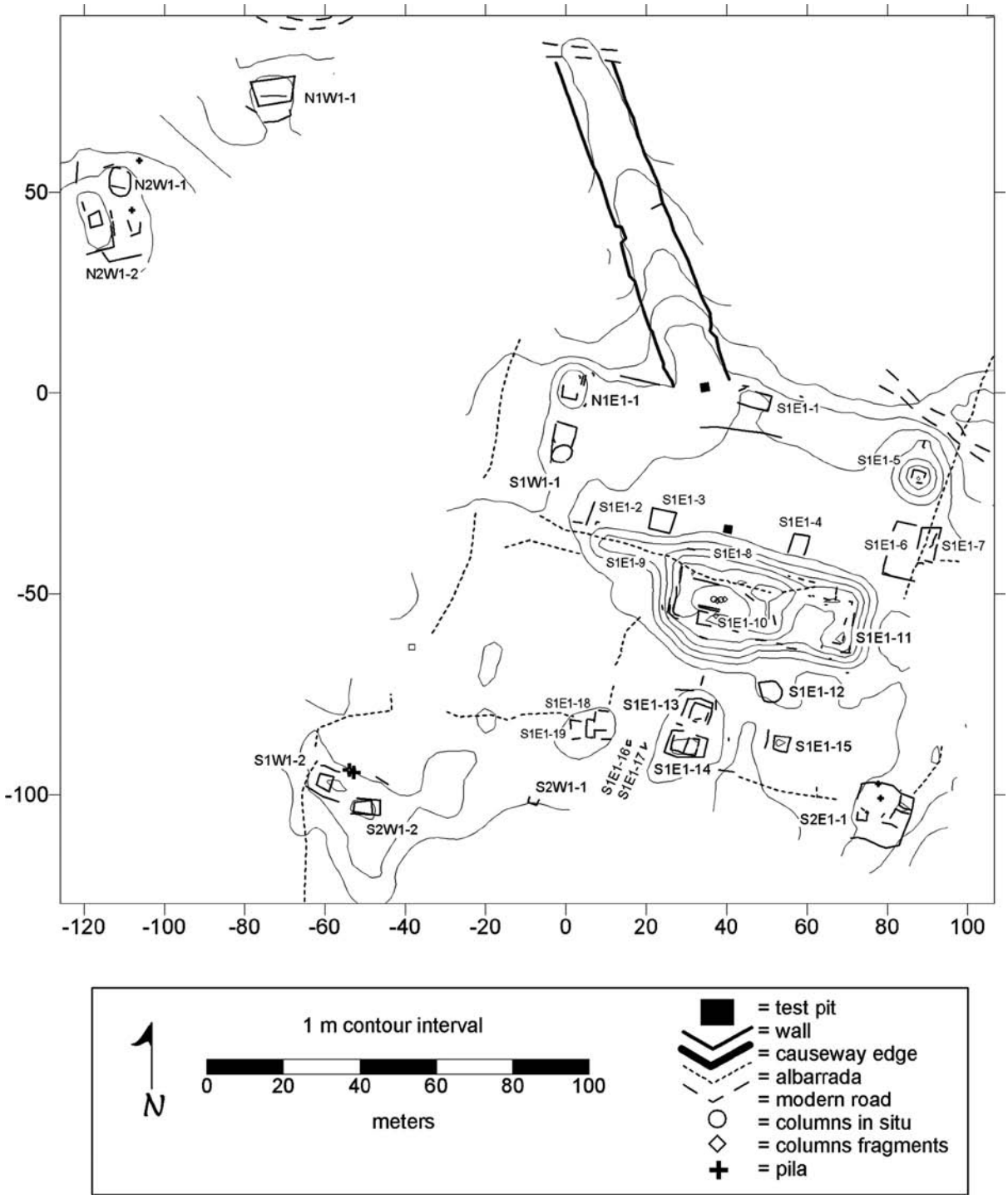


Figure 57. The San Andres terminus area.

boxes may have been constructed by different work groups and indicates that the causeway was built in sections (Flores and Normark 2004a, 2005c).

The site

The final 90 meters of the causeway to San Andres was mapped in greater detail (figure 57). Just as at San Juan, the causeway enters the large terminus plaza area at an odd angle. The angle between the western causeway edge and the plaza edge, which is parallel with Structure S1E1-8, is 57 degrees. This suggests that the causeway led to an already constructed area, as an alignment of 90 degrees otherwise would have been expected. Near the terminus, the causeway has another

visible construction box. At the very end, before the causeway joins the platform, there are two very low mounds forming a small alley of the causeway. This is probably the result of a tree fall (Flores and Normark 2005c:45).

Operation 1 was set up at the intersection between the causeway and the plaza. The ceramics primarily date to the Terminal Classic. When more of the plaza area was cleared, it was discovered that an alignment of stones continues in the same direction as the eastern causeway edge, but within the plaza area. Thus, the plaza was extended out over an existing portion of the causeway (ibid:45).

There is a line of stones in the plaza that runs parallel to the plaza edge, about 12 meters south. It can be found directly south of Structure S1E1-1. This was probably the edge of the older plaza that the causeway originally went to. The line does not seem to extend further to the west than what appears on the map, but it may continue further to the east. This might indicate that the structures on the northern corners of the plaza, Structures N1E1-1 and S1E1-5, were later additions, not originally part of the plaza layout, or they were older structures only later joined with the plaza (ibid:45). This also indicates that the causeway entered the older plaza in its northwest corner, similar to the San Juan terminus where the causeway also enters a corner of a plaza. This might also indicate that Structure S1E1-9, the western unfinished portion of Structure S1E1-8, probably was laid out when, or after, the plaza was extended to the north and west. The northern edge of the plaza, west of the causeway, is also a bit further south of the plaza edge on the eastern side of the causeway.

The final version of the terminus plaza area measures 110 x 40 meters. The northern part of the plaza is elevated about 1.5 to 2 meters above the surrounding terrain, but it levels out to the south, and portions of it are almost level with the ground surface (ibid:45).

West of the causeway terminus is a one meter high mound if measured from the plaza, or three meters high if measured from the nearby terrain. This substructure, N1E1-1, stands in the northwest corner of the plaza and it has a foundation brace. South of this structure is a rectangular foundation brace with a circular interior foundation brace, Structure S1W1-1. It lies directly on the western edge of the plaza. It is believed that the smaller structures that surround the plaza were part of the original layout because they follow the plaza edges. If they were additions after the plaza ceased to be used in its original way, they probably would have been more randomly distributed, such as in the centre of the plaza, as appears to have been the case at San Juan's northern "plaza" (ibid:45-47).

Figure 58. Structure S1E1-5 at San Andres.

Directly east of the plaza-causeway intersection is a low mound with a foundation brace, Structure S1E1-1. This is a pattern similar to San Juan which also has a small platform at such a location. Further to the east, in the northeast corner of the plaza, stands Structure S1E1-5, a four meters high pyramidal structure, with no preserved exterior architecture apart

from traces of a foundation brace on its top (figure 58). South of the pyramidal structure, on the eastern side of the plaza, are two foundation braces, and a possible double wall, forming Structure S1E1-6 and the smaller Structure S1E1-7, which lies east of the other structure (ibid:47).

Figure 59. Structure S1E1-8 at San Andres.

In the southern end of the plaza, directly north of the large Structure S1E1-8, there are three low structures. In the west is a foundation brace, Structure S1E1-2. In the middle is a low square platform, Structure S1E1-3, slightly separated from Structure S1E1-8. In the east is Structure S1E1-4, another low square platform that is partly connected to Structure S1E1-8. These may have been substructures for perishable structures (ibid:47).

Operation 2 was laid out in the plaza north of the central part of Structure S1E1-8. It was planned to date earlier parts of the site, associated with Structure S1E1-8. No sealed lot was found but ceramics mainly date to the Terminal Classic. No Chichen Slatewares, like those in portions of nearby Nohcacab were encountered (Johnstone 2004a). The Yokat Striated ceramics that were found were used to heat liquids which gave scorch marks on the ceramics. This could indicate a possible domestic association (Johnstone 2005b:180). Earlier ceramics including Late Formative Sierra Red and Early Classic Xanaba Red were also mixed with later samples.

On the southern edge of the plaza is a large mound, Structure S1E1-8. It measures roughly 75 x 35 x 6 meters (figure 59). It consists of three different components, Structures S1E1-9, S1E1-10 and S1E1-11. These are all parts of Structure S1E1-8, but they are treated as different structures. The lowest section, Structure S1E1-9, is located in the western portion of the south end of the terminus plaza and has a ramp-like appearance. It is taller in the east and lower in the west, although still more than two meters above plaza level. This part consists of unconsolidated rubble with an albarrada running along its axis. It may have been a late and unfinished addition to the rest of the structure (Flores and Normark 2005c:47).

East of this is the largest section of the building, Structure S1E1-10. It has an inner patio, Patio 1, with two columns in situ. These are 0.5 meter in diameter and are badly burned from multiple milpa firings. Such a patio with inner columns is very rare and it bears a slight reminiscence of colonnaded structures at Chichen Itza or in the Puuc area (ibid:47). However, colonnaded buildings may be unrelated to the Puuc area since they appear in earlier periods and in the Peten as well (Driver 2002). Some other column fragments were found nearby in the patio. The patio is surrounded on all sides by a mound that is 0.5 to 1.5 meters higher, which forms the quadrilateral range structure S1E1-10. However, this mound is lower in the central portion of each side, these most likely indicate entrances or open areas. There do not seem to be enough column fragments to make the columns as tall as the surrounding structure. Column pieces could be buried within the patio, but it is fairly flat and there is not much debris in it, other than soil. However, the very presence of columns in this patio suggests that they held up a perishable roof, which would have

created an interior space of roughly 15 x 7 meters. The southern edge of Structure S1E1-1 is the lowest part and it is extended to the south by a terrace on top of an outset stairway. There is no trace of a vault under the stairway. The stairway is not aligned towards Ichmul and the causeway, but towards what seems to be a residential zone to the south of Structure S1E1-8. The entrance into the patio from the stairway has remains of columns of similar dimensions as the ones in the patio. However, these were not in situ; they could have been moved there or they could also be in the same original area, as part of the entrance (Flores and Normark 2005c:47).

Patio 2 lies to the east of Patio 1 and it is located on a lower level. This patio is created by Structure S1E1-11 that encircles the patio on three sides and on half of the fourth side. The patio is partly open to the south, which indicates that the structure faced to the south and not towards Ichmul. The surrounding range structure is also lower in some areas, similar to the pattern in Patio 1 (ibid). The patio lacks columns.

The whole of Structure S1E1-8, together with Structures S1E1-5 and N1E1-1, form a triadic pattern, if we exclude the smaller structures also bordering the plaza. These arrangements are often found in Late Formative contexts, consistent with some of the ceramics found at the site. However, this particular arrangement appears to be Terminal Classic. Since the original terminus plaza was expanded at least once, the triadic pattern may not have been an initial design. This could mean that the structure south of the east corner structure was a corner structure of the elder plaza. Another possibility is that the plaza extension occurred during the construction, when constructors may have decided to enlarge the plaza after it already had been designed (Normark in preparation).

The southern part of San Andres has a multitude of lower structures. In two cases, including Structure S1E1-12 and the platform that contains both Structures S1E1-13 and S1E1-14, they seem to be directly in contact with Structure S1E1-8 to the north. Structure S1E1-12 is a square platform attached to Structure S1E1-11, which seems to be the base for another possible perishable structure, whose entire interior is covered by stones. South of this is Structure S1E1-15, which is a foundation brace. A few meters to the southwest is Structure S2E1-1 that supports Structures S2E1-2 and S2E1-3. Based upon their size, these foundation braces may have been corncribs. There are two metates on this structure. Structure S1E1-13 is a shrine that faces to the south, and it has some traces of an altar in its interior. Structure S1E1-14 is a foundation brace, with an interior wall that crosses its central part. Both structures face one another, forming a tiny plaza. West of Structure S1E1-14 are Structures S1E1-16 and S1E1-17. These are probably Postclassic shrines. West of these constructions are Structures S1E1-18 and S1E1-19, which are foundation braces arranged in several directions. These structures are situated on a feature, half platform and half hillock. Slightly south of Structure S1E1-19 is a small foundation brace directly upon the ground. The area south of Structure S1E1-8 is enclosed by an albarrada of megalithic uncut stones, which partially overlies the structures. In the southwest corner of the settlement mapped at San Andres is Structure S1W1-2, which has a foundation brace and two metates. Next to it is Structure S2W1-2, which mainly is a platform extension of a small hillock. It has traces of a foundation brace. A large albarrada, probably the boundaries of the nearby rancho, passes by Structure S1W1-2 (Flores and Normark 2005c:50).

As at San Juan, these structures in front of the larger structure (S1E1-8) are located where one would expect an older plaza to be; older than the one at the causeway intersection. In San Juan, these small structures, which only have foundation braces, could be later additions. This does not apply to San Andres. The buildings here are built upon substantial platforms. These could also be later, such as from the Postclassic, indicated by the presence of small shrines. However, most of the structures appear to be contemporary with Structure S1E1-8 (ibid).

Three other structures were mapped northwest of the terminus area. A rectangular building that sits on top of a hillock, Structure N2W1-2, has some interior rooms divided by small foundation braces. North of the base of the structure is a round structure, Structure N2W1-1. It

has an additional foundation brace that partly runs below Structure N2W1-2, probably the remains of an older structure. These two structures are situated on a low terrace which is the result of levelling of the hill. Forty m northeast of these structures and at a lower level is Structure N1W1-1. It is a small rectangular platform that is partly built on a small hillock. It has a small platform edge on its southern side (ibid).

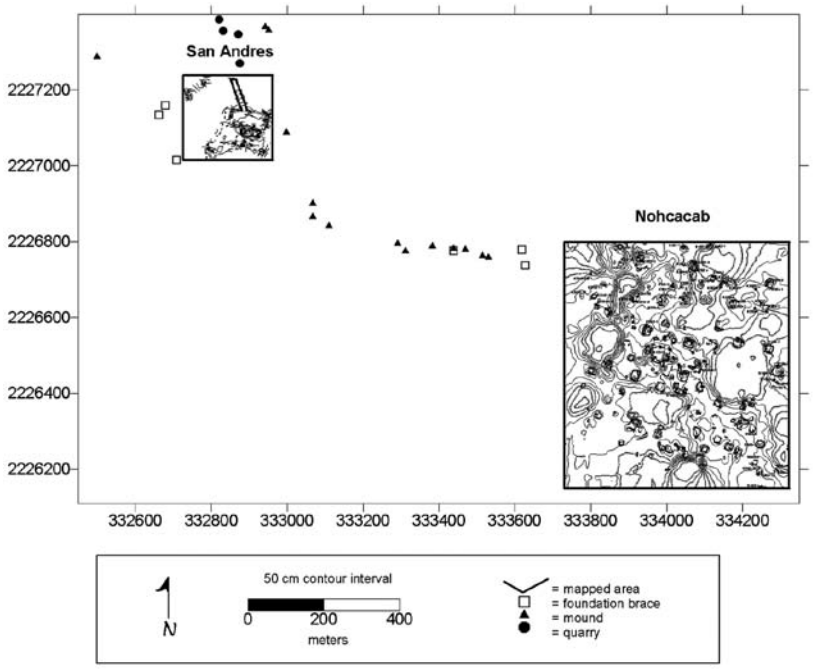


Figure 60. Settlement between San Andres and Nohcacab.

North of the mapped area are some small quarries on the eastern side of the causeway. An unmapped platform with foundation braces is also located on the eastern side of the causeway (ibid). About 400 meters southeast of the terminus area is a series of masonry rooms which is relatively modern (Flores 2004:192).

During an extensive survey along a fence that borders the rancho to which San Andres is part, several mounds were encountered and located with GPS. The easternmost mound that was observed is only 300 meters from the northwest corner of the mapped area around Nohcacab. A similar survey from Nohcacab revealed structures up to this fence. This suggests a continuous settlement between San Andres and Nohcacab (figure 60). However, this settlement seems to be east-west oriented. There is, so far, no known settlement north of this area, until the area of Xmakaba (approximately 1,500 meters northeast of San Andres and 900 meters north of Nohcacab's mapped area). The settlement does not seem to extend much west of San Andres. A large nearby milpa, 250 meters directly west of San Andres, revealed no occupation. However, a few potential mounds west of this milpa could be seen from the access road to San Andres, but these were never investigated. From what is currently known, it is not likely that the settlement is continuous between San Andres and Xquerol (Flores and Normark 2004a:84; 2005c:51).

Operation 1

This 2 x 2 meters test pit was excavated in the intersection between the causeway and the terminus plaza (figure 61). Level 1, Lot 1, consisted of boulders and contained mainly Late Formative Sierra Red and in a lesser quantity Terminal Classic Muna Slate. Level 2, Lot 1, contained Late Formative Sierra Red and Laguna Verde Incised sherds (Huerta 2005a:53).

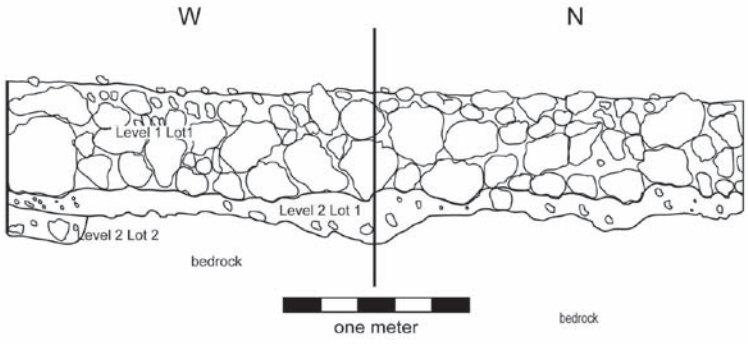


Figure 61. Operation 1 at San Andres.

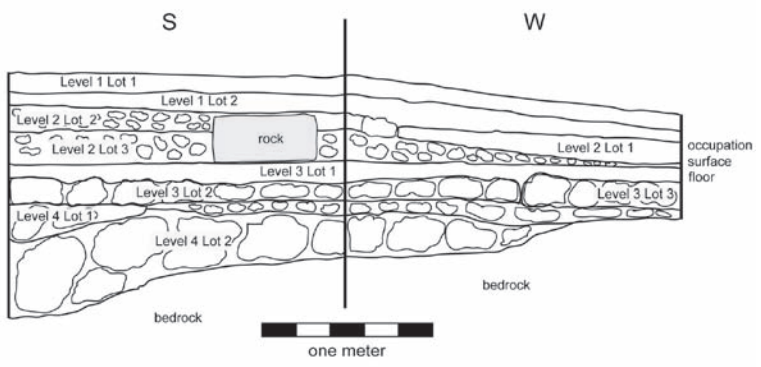


Figure 62. Operation 2 at San Andres.

Operation 2

This 2 x 2 meters test pit was aligned with the northern base of Structure S1E1-8 (figure 62). The aim was to date the earlier part of the terminus plaza. The unit was excavated in arbitrary levels of ten centimeters until "cultural" levels could be seen. Level 2, Lot 1 was compacted and could be an occupational surface from the Terminal Classic. There was a presence of small white stones and plaster fragments that might have been a poorly preserved floor (Floor 1) (Huerta 2005b:56-58). A rectangular stone lay on top of the floor. Ceramics from Level 2, Lot 3 were Terminal Classic. Level 3, Lot 2 and 3 below Floor 1 may have been an occupational surface above another occupational surface (Level 4, Lot 1) that dates to the Terminal Classic judging from the presence of Yokat Striated and Muna Slate (ibid:58).

4.2.7. Nohcacab

The densely settled site of Nohcacab is located within the ejido of Xquerol but it is only one kilometer from San Andres (figure 63). The name means "the large village" (Bretos 1992:131). Nohcacab is located within a rancho that has had little impact on the structures. Only one modern structure is found on top of an ancient mound. The ground is mainly covered with zacate grass which is burnt on regular intervals.

Most of the site has medium-to-small depressions and modified hillocks. The densest settlement is found between four larger depressions. These are open, rock free, they contain deep soil and they only have a few sherds on the surface. Every rise in the topography at the site has artefacts, structures and other features (Shaw 2003b). The farmers of today do not plant in the fertile depressions because the fast growing zacate grass prefers these places and these places need to be weeded. A newly cleared forest is less hard to weed. However, the zacate grass did not exist in this area in Prehispanic times (Johnstone 2004d:44). The density of structures and artefacts drops when the hillock/depression area is followed by a flatter area. The settlement is mainly continuous in the east-west direction.

Apart from a Colonial or modern well associated with the rancho, there are no water sources at Nohcacab. The well reaches water roughly 28 meters below the surface. Water catchments from rain, and storage seems to have been needed. Natural basins and nearby channels were modified to manage the water (Shaw 2003b:6-17). Two chultuns have been found in depressions to collect surface water (figure 16).

The two highest mounds at Nohcacab are only three meters high. Most structures are oriented slightly east of north. Some structures were built directly on the ground, others had raised platforms. Only one structure (N3E2-6) was located in a depression and it was close to a chultun. Johnstone has compared the distances of residential platform to their nearest neighbours at Nohcacab and Yo'okop. The average distance at the two sites is similar, roughly 27 meters. The average distance at Yo'okop is more variable. This could be explained by either larger areas of reserved space or that The topography of Nohcacab makes the residential areas more crowded (Johnstone 2004d:44).

Ceramic evidence from the test pits and architectural styles indicates that the occupation of the site changed back and forth in time. Late Formative materials have been found whereas Early

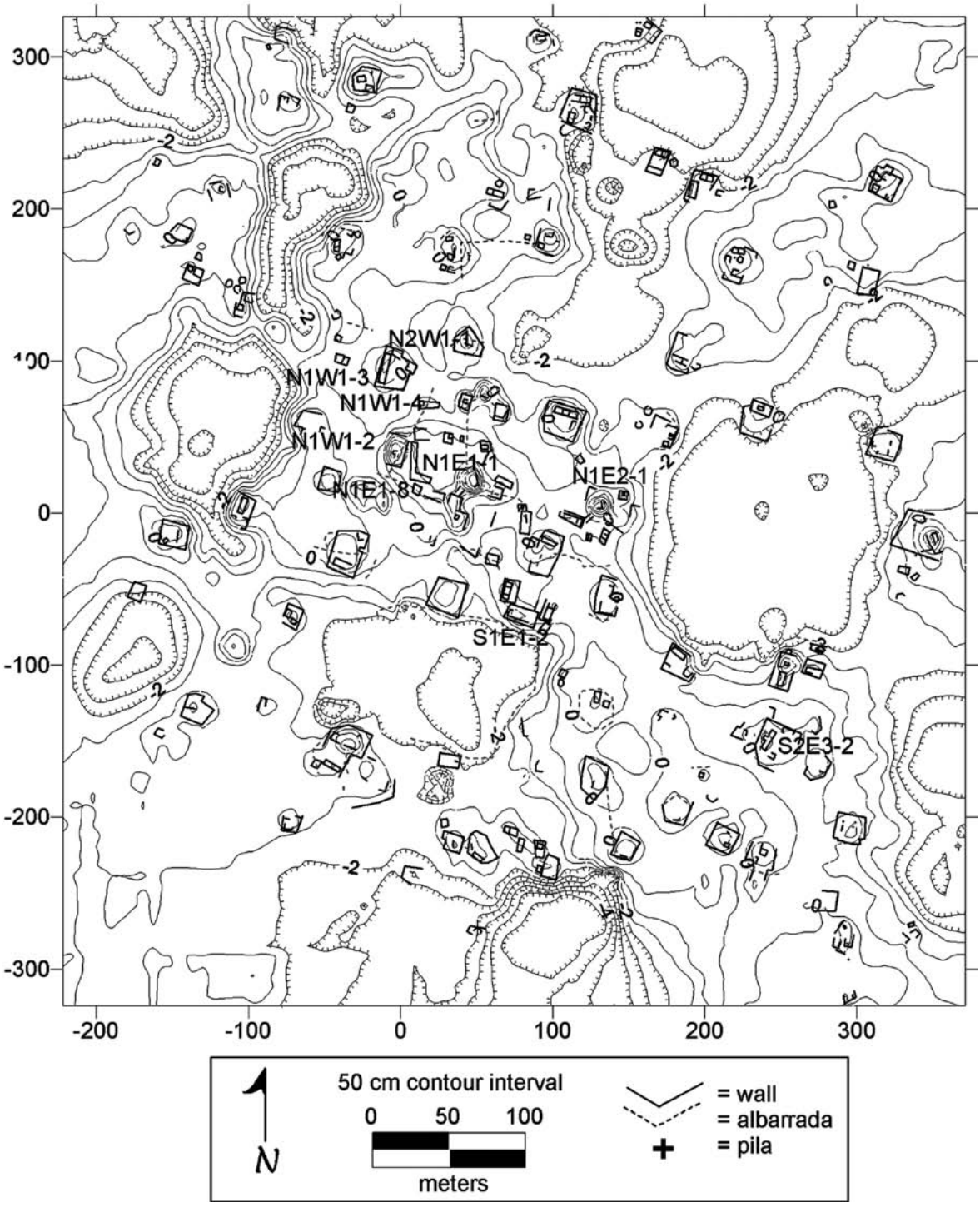


Figure 63. Nohcacab.

Classic and Late Classic materials are largely absent. Late Formative ceramics were also encountered during a reconnaissance to look for the boundaries of the site. The site may have reached its greatest aereal extent during the Late Formative (Shaw 2003b).

During the Terminal Classic, Florescent-style architectural remains dominate Nohcacab. Most of these Florescent-style buildings at Nohcacab have closed fronts with continuous foundation braces that are interrupted by doorways. There are two notable exceptions to this pattern at Nohcacab. The L-shaped Structure N1E1-8 (figure 66) and the T-shaped Structure S3E2-2 (figure 70) were open-fronted with one line of stones upon which a perishable and largely open fronted wall would have

Figure 64. Postclassic shrine at Nohcacab.

been constructed. They also had unusual semi-circular indentations with plastered surfaces. These were most likely used as doorways. The back and side walls consisted of core-veneer masonry that supported poles. The back walls had low benches. Another critical difference was a double wall line in the rear and sides and a single line in the front. There was also a lack of a subfloor sequence since plaster was directly placed upon the ground surface (Shaw 2004b). Chichen affiliated ceramics were found in association with these structures (Johnstone 2004a). In contrast, Ichmul, Yo'okop, Xquerol and Sacalaca seem to lack a Chichen Itza affiliation. The distribution of ceramics belonging to the Sotuta ceramic sphere (Chichen Slate, Chichen Red and Chichen Unslipped Wares) is usually seen as the extent of Chichen Itza's influence. This influence is either attributed to trade or conquest, or both (Rice and Forsyth 2004:46). However, trade wares are rare and are not good indicators of how strong the association was between the trading partners (Johnstone 2005a).

Nohcacab has an unusually high concentration of small Postclassic shrines (figure 12 and 64). Most of the shrines were not larger than a few square meters. The shrines were all one-room constructions with one entrance. Building elements from older structures, such as Terminal Classic door jambs, cut stones, and metates have frequently been used to construct the shrines. These shrines are found on top of older structures. They have smaller altars in front, and at a lower level than the older structures. The altars are about 1 x 1 meter square, consisting of several smaller flat stones arranged into a quadrangular shape (figure 12) (Normark 2003c). The surface around these shrines and altars often has Chen Mul incensario fragments (Shaw 2003b:17). Some of the shrines in both the central and the peripheral parts of the site were located near the depressions or other areas useful for agriculture or water management. No clearly secured Postclassic residential area has been found at Nohcacab (Normark 2003c).

Operation 1

This 2 x 2 meters test pit was located on top of Structure N1E1-1, which is the largest residential platform at Nohcacab (figure 65). The test pit was placed between a collapsed Terminal Classic vaulted masonry structure of Florescent-style, Structure N1W1-1, upon which a Postclassic shrine, Structure N1W1-2, has been constructed, and the L-shaped foundation brace, Structure N1E1-8. This place was chosen for the test pit because it indicated a construction sequence of at least 400 years. There was a substantial Late Formative construction associated with N1E1-1 sub-1, which was

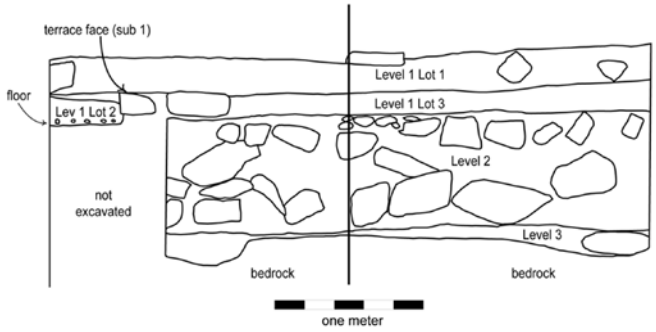


Figure 65. Operation 1 at Nohcacab.

a line of stones running east-west within the unit. There is a hiatus of construction activity until the Terminal Classic period, when there were at least two construction phases. Structure N1E1-1 was levelled to the height of the top of sub-1, something that probably preceded Structure N1W1-1. When Structure N1W1-1 was destroyed, the plaza was added 0.2 meter in height. It incorporated some of the veneer stones from Structure N1W1-1 in the fill. Structure N1E1-8 was constructed upon this new surface. When this structure was abandoned, part of its rear wall was removed for a Postclassic altar, Structure N1E1-10 (Johnstone 2003b).

Operation 2

This operation was a full scale excavation of the L-shaped Structure N1E1-8 (figure 66). The cut stones in the wall lines were oriented differently than in the Florescent buildings. This indicates that the stones probably have been taken from a nearby structure rather than produced for it. The structure was also built in front of Structure N1W1-1 which encroached upon the centre of the plaza that this older structure shared with Structure N1E1-2 to the east (Shaw 2004b:9).

Ceramics from Operations 2a-2f were mainly Terminal Classic with a few sherds from Postclassic Chen Mul Modeled incensarios and Late Formative ceramics. The Terminal Classic sherds were a mixture of mainly Puuc Slateware and lesser quantities of Chichen Slateware (ibid:15).

Middle Formative sherds were found in a 1 x 1 meter test pit within this operation. Two plaza flooring episodes took place during the Late Formative. The fill that is associated with the construction of Structure N1E1-8 dates to the Terminal Classic and consists of Puuc Slateware (ibid:21). These ceramics are consistent with ceramics found at other locations at Nohcacab with Florescent architecture. Chichen Slatewares encircle the building and have been found on the floor level. The end of the occupation of the structure appears to have involved fire, indicated by burnt floor fragments found in the eastern part of the structure. This area also collapsed fairly intact, whereas the rest of the structure gradually collapsed (ibid:24).

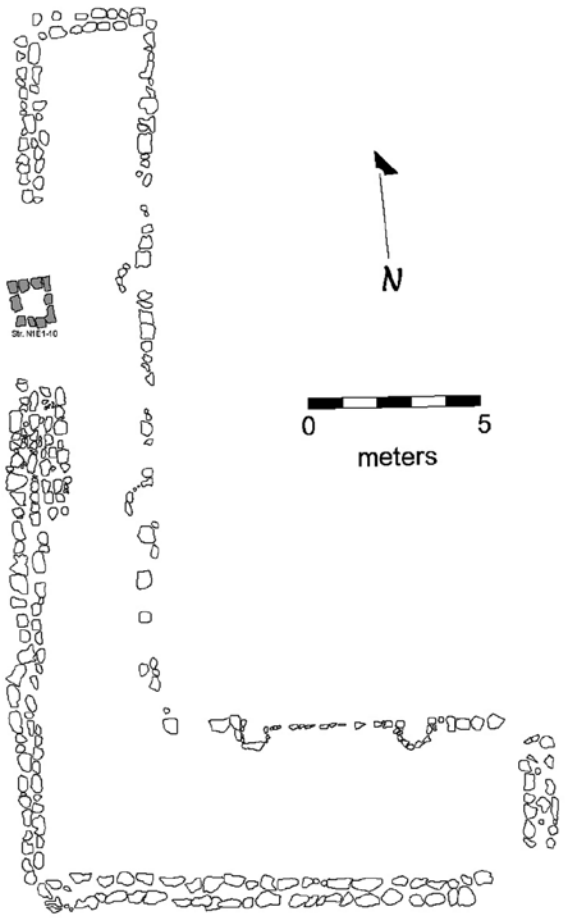


Figure 66. Operation 2 at Nohcacab, Structure N1E1-8.

Operation 3

This 2 x 2 meters test pit was placed on the north side of a residential platform, Structure N1W1-3, about 60 meters north of Structure N1E1-8 (figure 67). The purpose of the test pit was to increase the sample of Terminal Classic sherds and to document the distribution of Chichen

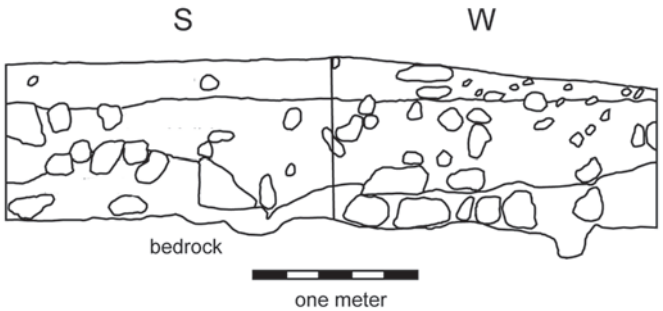


Figure 67. Operation 3 at Nohcacab.

Slatewares at Nohcacab. Ten centimeters arbitrary levels were used since it was a deposit believed to be a midden that faced the structure. The platform had a typical Terminal Classic rectangular foundation brace (N1W1-4) and a smaller square foundation brace (N2W1-1). The top three levels consisted of a midden. A few Chichen Slateware sherds were found, indicating that the distribution of these ceramics was not spatially restricted, but it may have been limited (Johnstone 2004c).

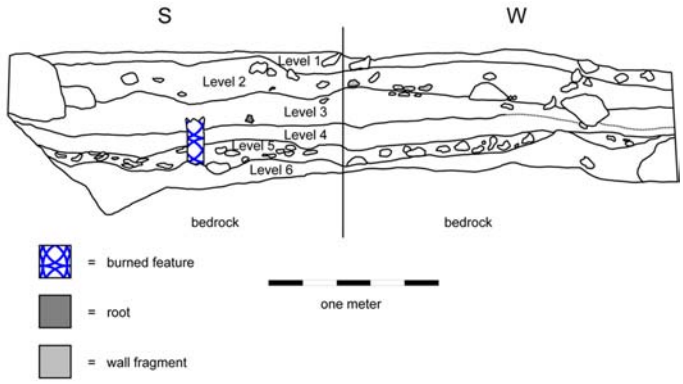


Figure 68. Operation 4 at Nohcacab.

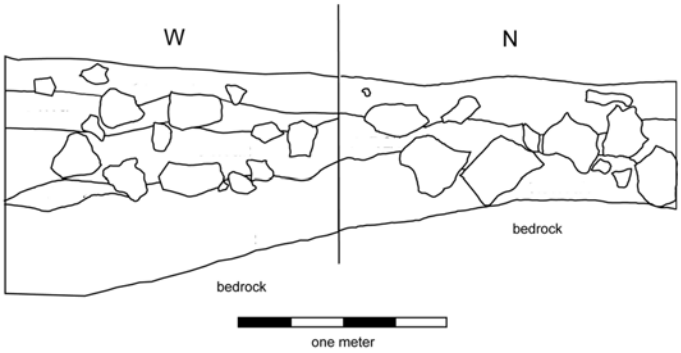


Figure 69. Operation 5 at Nohcacab.

Operation 4

This 2 x 2 meters test pit was located north of Structure S1E1-2 (figure 68). A spindle whorl was found in Level 1 which could indicate that cotton was grown and handled at the site. The depressions at Nohcacab could have been used for growing cotton. There were some Chichen Slateware sherds in Level 1, 2, and 4. A plaza floor was discovered in Level 3. Most sherds were Terminal Classic Puuc Slatewares, and contained no Chichen Slatewares. Level 4 and 5 revealed mainly Puuc Slatewares (Young 2004:29-33).

Operation 5

This 2 x 2 meters test pit was located in a plaza east of Structure N1E2-1 in order to gather a control sample of ceramic data near a building with Florescent architecture (figure 69). No floors were encountered in the six levels that were excavated in arbitrary levels. The remains of a sub-floor may have been present in the interface between Level 4 and 5. The sherds were predominantly Terminal Classic (Yokat Striated and Muna Slate) and contained no Chichen Slatewares (Lloyd 2004:39).

Operation 6

The other full scale excavation at Nohcacab focused on the T-shaped foundation brace of Structure S3E2-2 (figure 70). Just like N1E1-8, it was an open-fronted structure that had parallel walls on the sides and the rear. The front had a single wall and may have been a retaining wall for a raised floor. There was a semi-circular indentation in the front and a space where another might have been in a symmetrical location. In Level 1, eight obsidian microblades, two side-notched projectile points and a chert axe were found. A poorly preserved plaster floor (Floor 1) was found below the level of the wall. It had been burnt to a bluish grey. Puuc Slateware sherds were found on the level of this floor. Several sherds had been burnt and were heavily spalled (Johnstone 2004b:40).

This building does not seem to have had a high masonry wall like the L-shaped structure had. The height was probably less than onr meter. There was an earlier building, Structure S3E2-2 sub-1, associated with Floor 1. The only remains of it was a three meters long section of a platform edge with cut veneer stones that were smaller and more uniform than in the later structure. These stones are consistent with Florescent-style architecture. The floor that would have covered sub-1 was missing, showing the fill that extended north of the wall before it disappeared. Unlike the lots

associated with the later structure, a lot excavated in the fill of sub 1 had no Chichen Slateware (ibid).

The better preserved Floor 2 was 0.10 meter thick and covered ¾ of the unit. Floor 3, 0.35 meter below Floor 1, was covered by a layer of saskab. It contained Terminal Classic ceramics and a larger number of Early Classic sherds. During consolidation it was noted that the west wall of Structure S3E2-2 had been built directly upon sub-1 (ibid).

In conclusion, there were two Terminal Classic floors that preceded the two structures encountered in this operation. Floor 1 superseded these two floors and was associated with sub-1. The wall of sub-1 was pulled down before the open-fronted structure was constructed and its plaster floor was removed. A fire was then burnt over the area. Later, the open-fronted structure was built over Floor 1 and sub-1. The floor for the structure that covered sub-1 had veneer stones, obsidian microblades and Chichen Slateware. Chichen Slateware sherds were also found outside the structure (ibid:43).

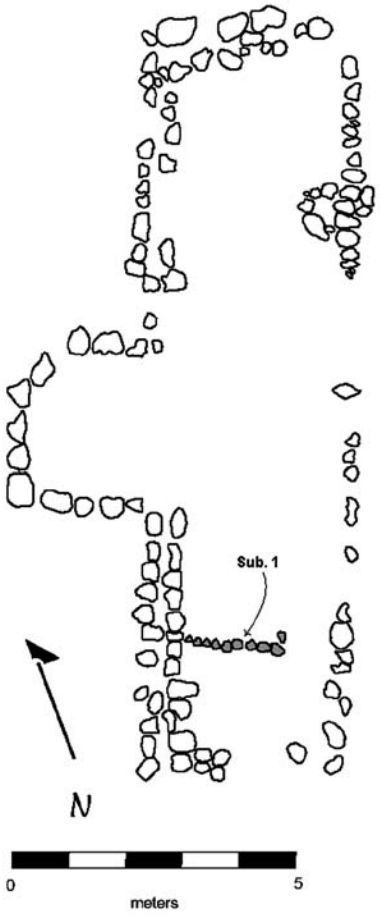


Figure 70. Operation 6 at Nohcacab, Structure S3E2-2.

4.3. Yo'okop

Yo'okop in the ejido of Saban, is a large site located in the west-central portion of Quintana Roo (figure 71). It was investigated for three seasons (2000-2002). Although the work in this area did not include survey and mapping at other locales, at least one other site is known. It lies a few kilometers southwest of Group A at Yo'okop. The site was visited by Shaw and Johnstone in 1998 and seems to have large quantities of Late Formative sherds (Shaw 2001c:17).

Yo'okop consists of four major architectural groups (Groups A, B, C and D). These groups were linked by three causeways. Group A is the southernmost group. A 718 meters long causeway, Sacbe 1, leads from the north-central edge of Group A to south-central Group B. Group B is further linked to Group C by Sacbe 2 which ends 1,800 meters further to the north. The 690 meters long Sacbe 3 links the northwestern section of Group A with Group D. The short Sacbe 4, only 30 meters in length, is within Group B.

It is believed that all causeways at Yo'okop were constructed during the Terminal Classic. Shaw (in preparation-a) argues that Yo'okop has a linear site layout, originating in Group A, the most elevated part of the landscape. It would have formed a linear connection to Group B by Sacbe 1 and Group C by Sacbe 2. Sacbe 2 appears to be Terminal Classic, but it could be anything from the Early Classic to the Postclassic. Sacbe 3 between Group A and D breaks this linear pattern, but the Groups are fairly equal in terms of architecture. Sacbe 3 is most likely Terminal Classic since Group D was mainly occupied during the Terminal Classic. Sacbe 4 was most likely of a later date. Thus, Yo'okop lacks a central core like Ichmul. There may have been multiple cores that may have had varying importance at different periods (Shaw in preparation-a). They may also have had different functions like that proposed for the "dismembered" settlement at Dzibanche (Nalda 2005).

Between these larger groups there are moderate-sized mounds of five to six meters in height, platforms, rejolladas and smaller structures where the majority of the population resided. Most of the site is located on a flat terrain, apart from Group A which is found on top of a natural rise.

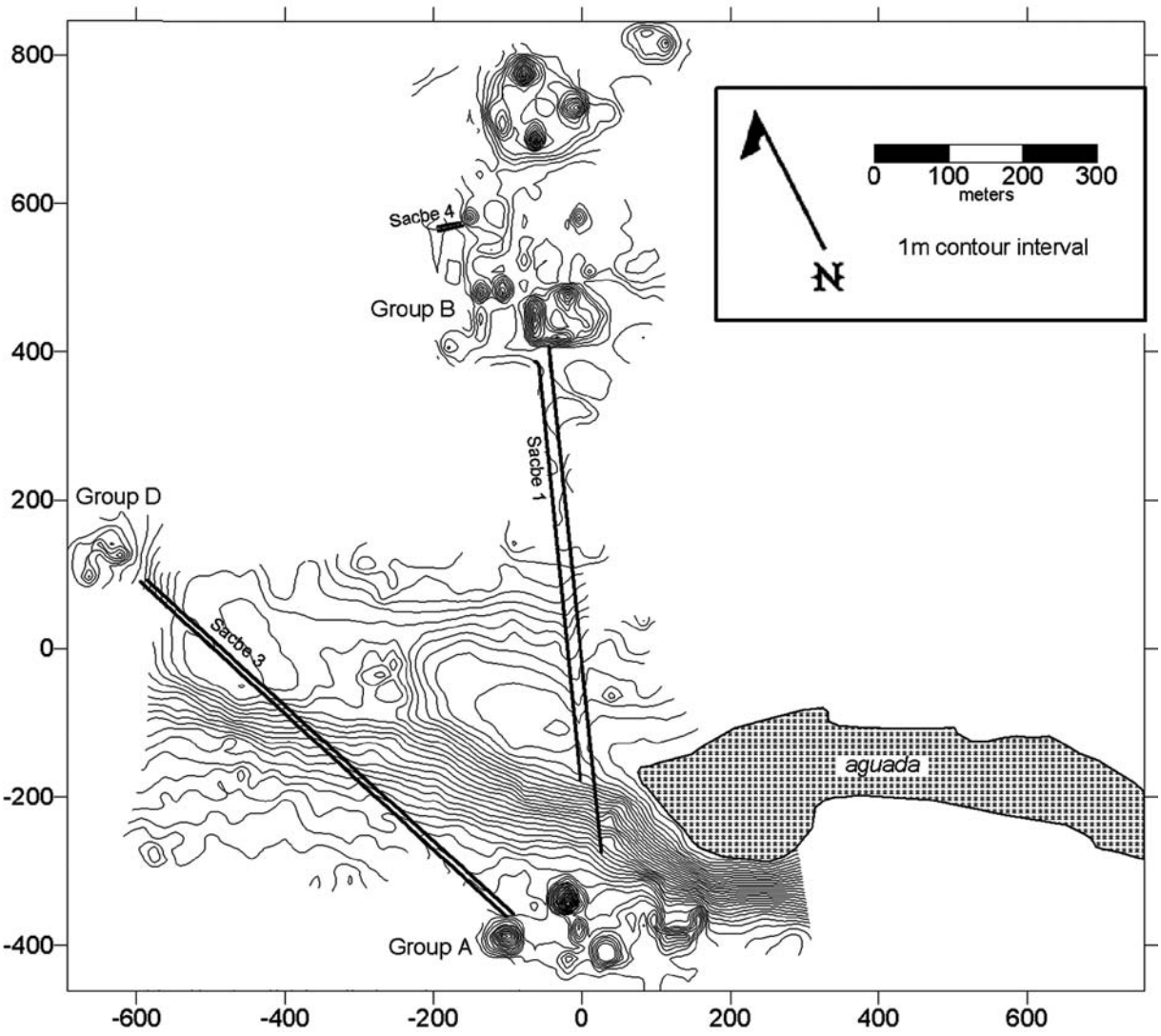


Figure 71. Yo'okop without Sacbe 2 and Group C.

There is only one known major water source at the site and that is a large aguada northeast of Group A (figure 15) (Shaw 2001c:17).

Prehispanic chronology

Ceramics from eight test pits and one full-scale excavation have revealed the following chronology. The Middle Formative Itzamna complex (450-250 B.C.) is similar to the Yaxuna Ia ceramic complex and is part of the Komchen sphere (Johnstone 2005a:159). The ceramic groups are waxy-slipped and thick walled monochromes and bichromes that often used preslip incision. These ceramics have either been found in mixed lots, sometimes in soil just above bedrock or as part of later construction fill (Johnstone 2001a:54).

The Late Formative Pahuatun complex has five groups and eleven types (ibid). The complex has a high frequency of Sierra group which makes it part of the Chicanel ceramic sphere. Similar complexes are found at Komchen, Yaxuna, Xuilub and Muyil (Johnstone 2005a:160). These ceramics are predominantly thin walled waxy slipped monochromes (Johnstone 2001a:55). In Operation 8, a large number of these ceramics were found in sealed lots. The number of floors made it possible to subdivide this period into early and late facets. During the late facet there is an introduction of Repasto Black on Red and Xanaba Red (Johnstone 2002a:77).

The Early Classic period is represented by the Ixchel complex. The earlier ceramic types were

replaced, except for Xanaba Red. Flaky Ware and Gloss Wares replaced the Waxy Wares. The latter form suggests a trade route from the Southern Lowlands. The Ixchel complex is similar to Yaxuna and Pixoy and it is therefore placed within the Xculul ceramic sphere (Johnstone 2005a:160-161). Three sealed floor lots from Operation 8 recovered plenty of Early Classic sherds. Since there is no inclusion of the late facet ceramics Maxcanu Buff, Hunabchen Red and Tituc Orange Polychrome Bandas variety, this may indicate that these floors were early Early Classic (Johnstone 2002a:77).

Yo'okop's Late Classic Chac complex includes Puuc Slateware and Southern Lowland imports such as Saxche Orange Polychrome. Six groups and nine types are evident at the site. The Batres group is usually found around Coba and is scarce at Yo'okop. There are two striated types, probably produced along the coast. One of these is Dos Caras Striated. The other is called Sacalaca Striated and has not been described at other sites in the Northern Lowlands (ibid:77).

The Terminal Classic Balam Kin complex consists of five groups and seven types. It is dominated by the Chum and Muna ceramic groups. Similar ceramics have been found at Yaxuna and Pixoy which places Yo'okop in the Western Cehpech ceramic sphere (Johnstone 2005a:163). Only two Sotuta sphere diagnostics have been found at Yo'okop. The imported polychrome wares disappeared and were replaced by Puuc Red and Thin Slate wares. Thus, during the Terminal Classic, there seems to be a reorientation in Yo'okop's connections, from the Southern Lowlands to the Northern Lowlands (Johnstone 2001a:55).

The Postclassic Kauil complex is not yet a functional assemblage of forms and types (Johnstone 2005a:164). The absence of the complex from plaza areas and its abundance on the surface near Postclassic summit shrines indicates that the Postclassic construction and occupation was limited to a few places (Johnstone 2001a:55). The most common type is Chen Mul Modeled (Johnstone 2002a:82).

4.3.1. Group A

This group measures 400 meters (E-W) by 200 meters (N-S) and is located between 18 and 46 meters above the site datum and is situated on a hill (figure 72). The architectural style of many of the buildings of the Group seems to be Early Classic, such as megalithic stairways in Izamal style. There are also substantial modifications and constructions dating to the Late Classic. There are not many traces of Terminal Classic construction at Group A, but there are substantial traces of a Postclassic presence (Shaw 2001c:18).

The flat areas in Group A were expanded by the construction of terraces out towards the slope down to the aguada. The terraces are 0.2 to 2 meters high. They consist of a dry core fill, gravel on the surface and they are faced with roughly cut stones (Shaw, et al. 2000:43).

Structure S4W1-1, also known as the "Castillo", is the largest single structure at Yo'okop. It is 28 meters high above the surrounding terrain and measures 55 meters (N-S) and 45 meters (E-W). It displays two construction phases. The lower part of the structure is 22 meters high and is Late Classic. It is crowned by a six meters high Postclassic structure. The Late Classic structure has at least two terraces and is faced with small well-dressed stones. On the north side there is an outset stairway lacking balustrades going up to the original Classic period height (Shaw, et al. 2000:18). Part of the northwest corner is intact and curved which makes it somewhat similar to the Temple of the Magician at Uxmal or Xaybe at Coba. A one meter wide Postclassic stairway with balustrades of almost the same width has reoriented the building to the northeast. The Postclassic summit temple on top of S4W1-1, called S4W1-6, has two stories linked by internal ramps or stairs. The lower facade of the front has reused Puuc spindles that support a recessed lintel that has collapsed. The internal wall is covered by at least five coats of plaster. Two of them have traces of blue paint (Shaw, et al. 2000:44). Stromsvik and others (1955) and Wilson (1974) report of a supposedly uncarved altar (Altar 2) that was located in front of the stairs of Structure S4W1-1. It was not relocated by Shaw and Johnstone (Shaw, et al. 2000:64).

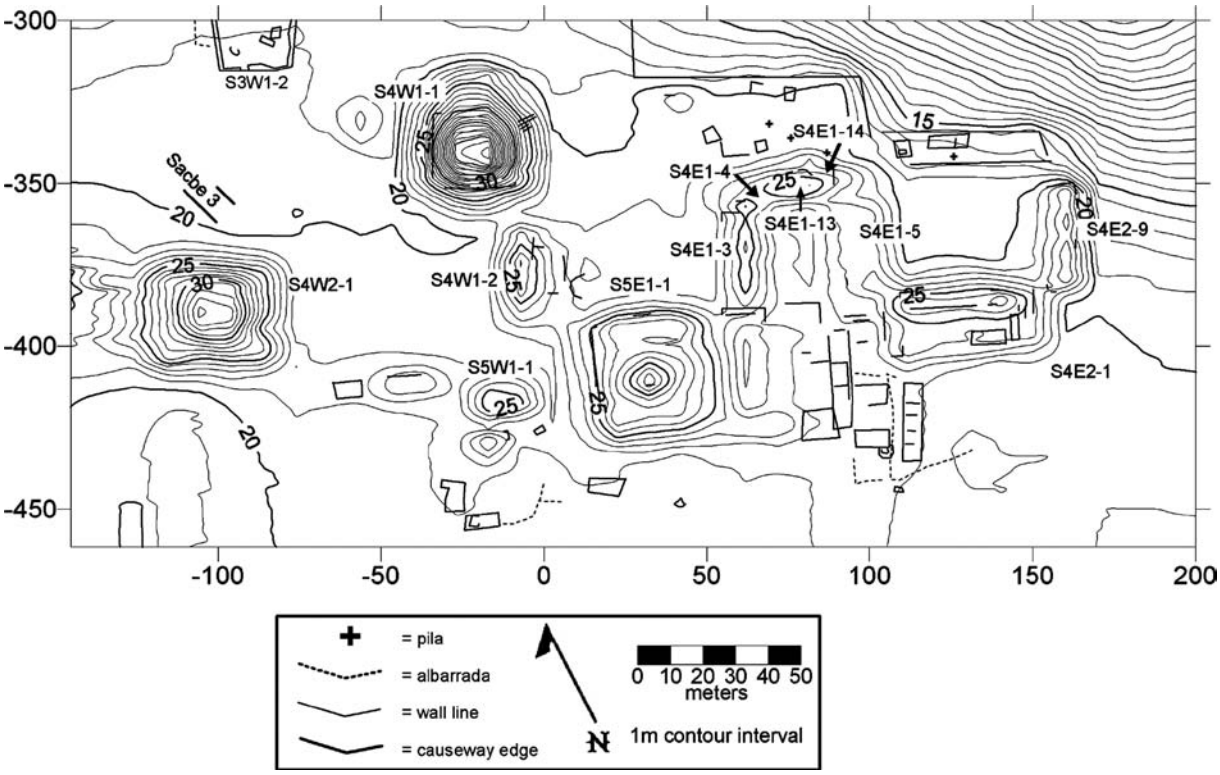


Figure 72. Group A.

The second largest structure in Group A is Structure S4W2-1, measuring 45 x 45 x 15 meters. It has entrances on a terraced level, about 9.5 meters above the plaza. Two descending passages with intact vaults on the north and east faces lead down to two small (1.5 x 1.5 meters) square chambers. The north chamber has a looters' hole. The walls consist of small, roughly quarried stones with plenty of chinking and plaster. This structure has three terraces, constructed of dry laid stones without any known facing stones. A central raised part of the structure continues upward for six meters, in two terraces. This visible structure is Postclassic. The only hint that parts of the structure originally were of earlier date is that this is where the Terminal Classic Sacbe 3 ends. Shaw and Johnstone believe this was an accession structure, based on similarities with a structure at Yaxuna (Freidel and Suhler 1999; Shaw, et al. 2000:22).

An apparently important building in Group A is Structure S5E1-1. It measures 50 x 50 x 11 meters. It has a square base, encircled on all four sides by higher portions of the building that form a depression. In the centre of the depression is a pyramid. It resembles a smaller version of Tikal's South Acropolis. The moat could potentially be the result of a collapsed substructure. This building connects the pyramidal structures in the western part of Group A with an area dominated by range structures (Shaw, et al. 2000). Five carved blocks have been found in Group A. The carved stones are likely to be from the same building due to their similar carving depths, glyphic compounds and cartouche formats (Wren, et al. in press). It is believed, based upon a local informant, that the known carved blocks (roughly 0.4 x 0.4 meter) originated in this structure, although they were found elsewhere in Group A. The carved blocks at Yo'okop were probably stairway raisers (figure 73) (Wren and Nygard 2005:170-171). Stone B may include the name Sky Witness, or Ruler 17 from the Kaan kingdom (Martin 1997:861). It may have been carved during or later than his reign. He may have come to power around A.D. 546, but he reigned at least A.D. 561-572 (Martin and Grube 2000:102-104). Stone B is probably a posthumous reference to this ruler. Wren and others (2001:95) believe that Yo'okop was an important site that connected sites in the Southern and the Northern Lowlands. Stone C may describe a royal woman; "*the kaloomte' Ix Ch'ak Kab*". It is believed that she came from the Kaan kingdom (Wren and Nygard 2005:174-176). The upper right glyph

block of Stone F may have the phrase *u kahi* ("by his doing" or "under the auspices of") (Shaw, et al. 2000:58). This last glyph could possibly imply a hierarchical relationship to another site, most likely Calakmul (Shaw, et al. 2000:58; Wren, et al. 2001:101) or Dzibanche in the Kaan kingdom.

In the plaza area west of Structure S5E1-1 are the four meters high Structures S5W1-1 and S4W1-2. The latter has a megalithic staircase of possible Early Classic date. North of Structure S5E1-1 is a large plaza that could have been the southern terminus area of Sacbe 1.

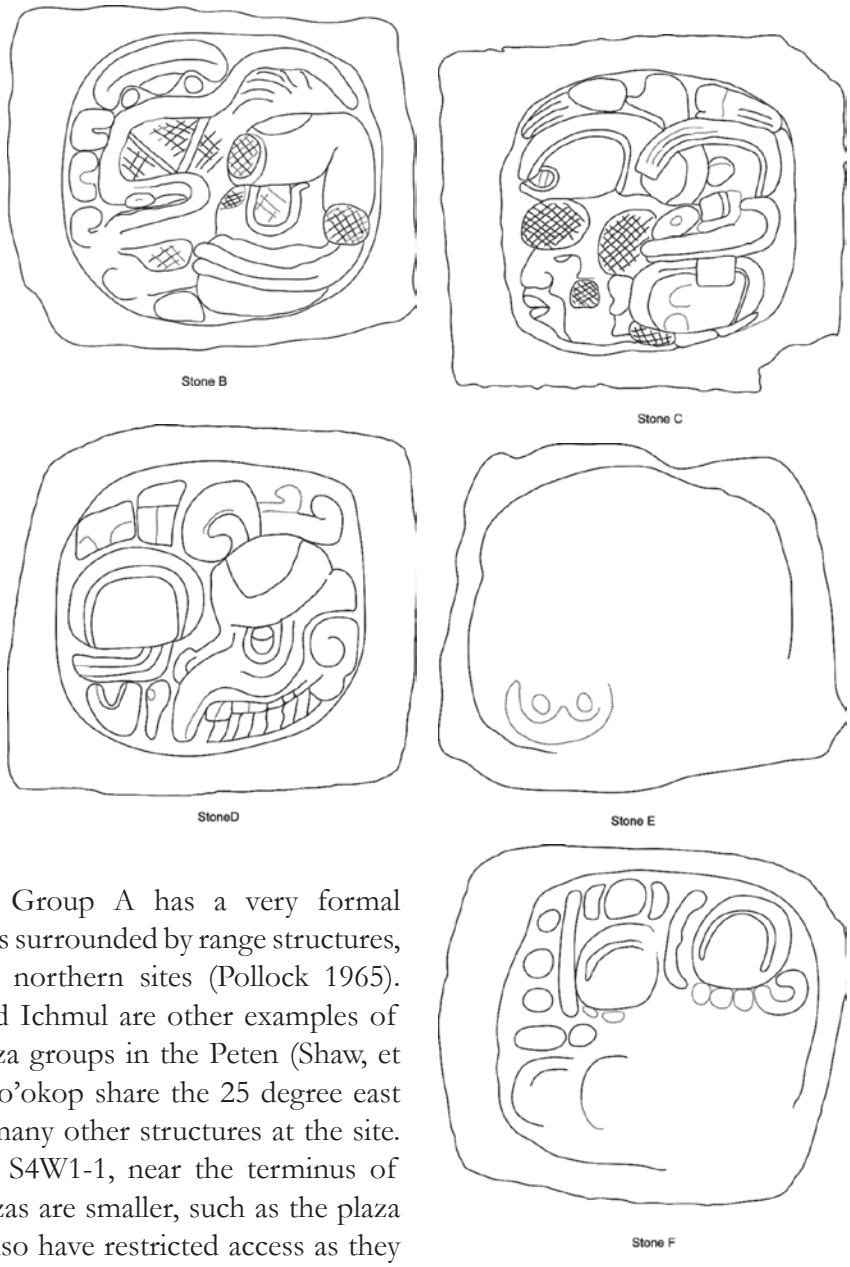
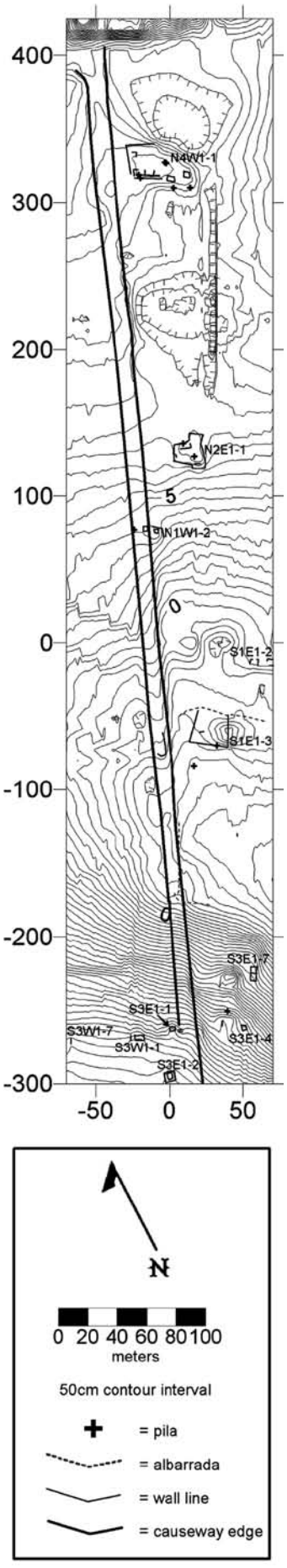


Figure 73. The carved stairway blocks from S5E1-1.

The eastern part of Group A has a very formal architectural layout with plazas surrounded by range structures, which is unlike many other northern sites (Pollock 1965). Coba (Folan, et al. 1983) and Ichmul are other examples of this layout that resemble plaza groups in the Peten (Shaw, et al. 2000:44). The plazas at Yo'okop share the 25 degree east of north alignment seen in many other structures at the site. Some of the plazas east of S4W1-1, near the terminus of Sacbe 1, are large. Other plazas are smaller, such as the plaza north of S4E2-1, and they also have restricted access as they were surrounded by range structures. Around the periphery of the group are buildings which probably had perishable superstructures (Shaw 2001c:18).

There are several small plazas directly east of Structure S5E1-1. The first two are well defined by moderate-sized range structures. Even smaller plazas are found further to the southeast. Northeast of S5E1-1 is a large plaza, surrounded by large range structures. Structure S4E1-3, on the western edge of the plaza measures 25 x 17 x 5 meters. The eastern structure of this plaza, Structure S4E1-5, is also the western edge of the largest plaza with range structures in Group A. The large transversely vaulted range structure S4E2-1 on the south side, measures 57 x 33 x 7 meters. It has a central stairway that faces to the north (Shaw, et al. 2000:27). Another large transverse vaulted range structure is found on the eastern edge, Structure S4E2-9. This plaza group is located near the slope down to the aguada.

Both apsidal and rectangular foundation braces are found in Group A. Some of them have multiple rooms and inner benches. Most foundation braces are found in the perimeter of the monumental architecture, but some have been found in the centre of plazas. This may indicate late occupation or maybe the result of siege structures, such as those structures between S5E1-1 and



S4E2-1 (ibid:45).

Only a few small structures were found within the monumental portions of Group A, but plenty of small buildings were found in the periphery of the group. One is found in the north-central edge of the group's northern terrace. From here, the terrain slopes sharply down to the flat plain. This area lacks vaulted architecture, but the structures have a formal entrance. The northeast edge is formed by a long foundation brace (Structure S3W1-7) (figure 74). Two steps define the natural slope from the settlement area. The steps continue to the west and end near Structure S3W2-1 that sits on an extended terrace edge. Most of the architecture in this cluster is south of the steps and all structures, apart from Structures S3W2-1 and S3W1-7, are located within a low stone wall. The sunken Structure S3W1-6 may have been a sweatbath (ibid:29). East of this cluster and west of Sacbe 1 are scattered remains of non-vaulted structures. Structure S3E1-2 is small but since it is close to S4W1-1 and the terminus area of Sacbe 1 it may have been important (ibid).

The southern and southwestern edge of Group A has an abrupt transition from large architecture to small platforms and foundation braces. A south-central cluster of structures uses contemporaneous albarradas to divide the cluster. This small architecture also has a 25 degree east of north alignment. Other small scale architecture tend not to have such rigid alignments. The small foundation braces that do not use this alignment tend to be Terminal Classic. One hundred meters east of Group A is a large platform, called Structure S4E3-1 upon which seven structures are located (ibid:31).

The large aguada measures 600 meters (E-W) by 200 meters (N-S) and is located directly northwest of Group A. It appears to lack a connection with ground water and it needed to be refilled by rain water (Shaw, et al. 2000).

Sacbe 1

Sacbe 1 is 718 meters long, 12 meters wide and connects Group A and B (figure 74). The height varies between 0.1 and 1.7 meters. The alignment is 20 degrees east of north, five degrees off the alignment of the monumental structures and some of the foundation braces at the site. It begins in Group A, at the northeastern edge of a plaza which lies northeast of Structure S4W1-1 (the "Castillo"), and roughly 120 meters directly north of Structure S5E1-1. Its origin is not clear, but the eastern causeway edge is fairly visible within Group A. This may be because it functioned as a terrace in the slope down to the aguada. The western edge is near several undated small structures that may have destroyed this part of the causeway. Further down the slope, the causeway is visible on both sides and it has a height of roughly one meter (Shaw, et al. 2000).

At the bottom of the slope is Altar 1 on top of the causeway. It is 1.5 meters in diameter and has three concentric rings of hieroglyphs

Figure 74. Sacbe 1 at Yo'okop.

set in cartouches. These are badly eroded (ibid:64). This was most likely an Early Classic monument that originated in Group A and was later moved downhill (Shaw in preparation-a). Directly north of the altar is the modern dirt road between Saban and Dzoyola which cuts through the causeway, creating a five m wide cut and thus exposes the core of the causeway. The causeway is faced with cut stone, laid out in a horizontal line and in mortar. The core consists of dry laid stone that grades from boulders to cobble- and pebble-sized stone on the top (ibid:45).

North of the road cut, there is a relatively flat terrain, and the causeway is here roughly 0.5 meter high. A Postclassic altar (N1W1-2) is located upon the causeway and another one is located on the ground a few m to the east. Albarradas found northwest of the aguada are probably late constructions, as they partly lie over earlier architecture, such as Sacbe 1 (ibid).

Several saskaberas are located near and sometimes under the causeway. A collapsed saskabera has been found in the middle of the causeway, near Group B. Shaw believes the excavation of the saskabera pre-dates the causeway and may have had a perishable "bridge" if the saskabera collapsed while the causeway was still in use (ibid). However, as with the San Andres causeway, it would have been fairly easy to fill the hole, considering the amount of filling used for other constructions at the site. I believe the saskabera collapse post-dates the causeway.

There are several structures surrounding the causeways on both sides. Vaulted structures are located at the southern end and eastern side of Sacbe 1. These vaulted structures could possibly mark an entrance into Group A. The structures are also relatively close to the sweatbath, Structure S3E1-5 (Kashak 2002b:18).

At the terminus in Group B the causeway widens into a plaza south of the Central Acropolis (N5W1-1). There is an L-shaped entrance into Group B from the causeway. Operation 1 in this terminus area showed a Terminal Classic date for the construction and use (Shaw in preparation-a).

Operation 3

This 2 x 2 meters test pit, located west of Structure S4W1-1. The purpose of the test pit was to investigate a depression that could have been used for water catchment or storage (figure 75). However, the test pit produced no evidence for a lining that would have held water. Ceramics indicate activity from Late Formative and through to the Terminal Classic. Most ceramics were from the Late and Terminal Classic. Obsidian fragments and a shell inlay piece were also found (Shaw 2001h:45, 47).

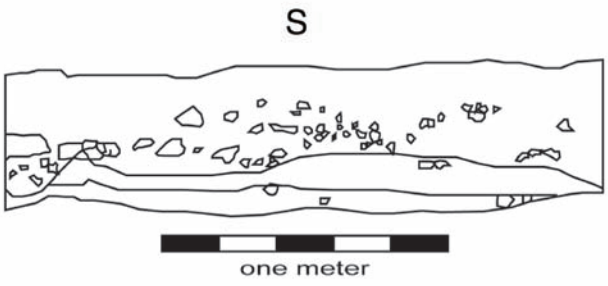


Figure 75. Operation 3 at Yo'okop.

Operation 5

The eastern part of Group A has several range structures located around formal plazas. The largest one, Structure S4E2-1, faces northward towards a large plaza and the aguada. This 1 x 1 meter test pit was placed in the plaza with the purpose of dating the activity in this area (figure 76). It contained no sealed lot and it was impossible to establish a firm date for the

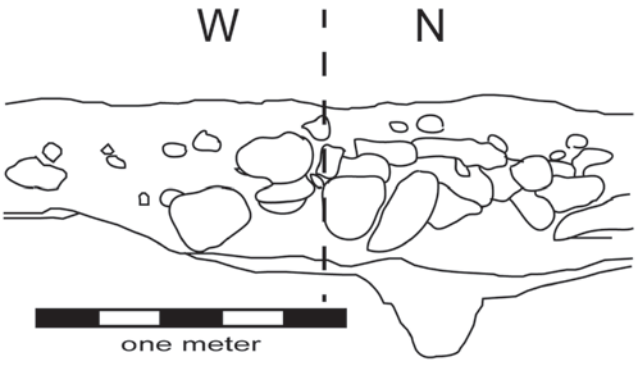


Figure 76. Operation 5 at Yo'okop.

plaza construction. The existence of mainly Terminal Classic sherds and no later sherds dates it to the Terminal Classic (ibid:52).

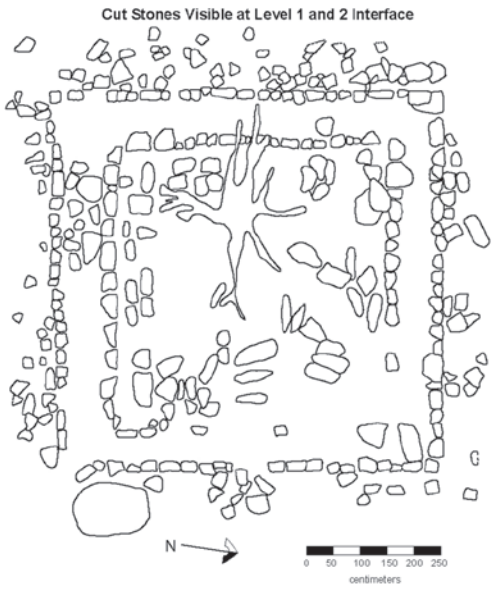


Figure 77. Operation 6 at Yo'okop, Structure S3E1-5.

Operation 6

This is the only full-scale excavation and consolidation conducted at Yo'okop. Five suboperations were carried out in and around Structure S3E1-5 (figure 77). There are no obvious Terminal Classic buildings in the central part of Group A. However, Structure S3E1-5 is a small mound near the edge of the aguada withTerminal Classic cut stones. The building is about 7 x 6.5 meters large in size (Shaw 2002b).

In the early Terminal Classic the structure was built with stout walls that supported a square stepped vault that covered a single room, resembling the Temple of the Seven Dolls at Dzibilchaltun (Andrews and Andrews 1980). Veneer stones made up the exterior walls. The interior had more roughly shaped stones, possibly of Late Classic date. The exterior had a thin layer of plaster that had been painted red. At least one serpent head had decorated the exterior (Shaw 2002b:46).

Two separate and parallel benches ran along the whole interior. They were separated by a narrow walkway. Apart from being places for seating and/or sleeping, these benches helped to buttress the walls that supported the vault. The floor of the walkway had a plastered surface (Floor 3). The surfaces of the benches had been smoothed with plaster that covered marl and dry core fill. Cut stones formed the face of the benches. A later floor (Floor 2) covered the walkway. This may have occurred when the exterior plaza of the structure also received a second floor. The two benches were later joined to form a single U-shaped bench (ibid:59).

There are few ceramic sherds or other artefacts inside or surrounding the structure. This makes it less likely to have been a domestic structure. Its location near the aguada rather points to a water-related use. There was a light burning detected on Floors 1 and 2 of the corridor which suggest that fire was used. It seems likely that the building was a sweatbath, although no firebox was found. There are other examples of sweatbaths without fireboxes. The water from the aguada would have been used to pour over heated stones inside the building. The runoff would have

Figure 78. The sweatbath after consolidation.

flowed out in the walkway. This makes the structure similar to Structure P-7 at Piedras Negras (Proskouriakoff 1963). It resembles Structure 6F-12 at Yaxuna where heated stones lay on the floor (Johnstone 1994; Shaw 2002b:62).

The vault of the structure collapsed, perhaps as part on a termination ritual. The contents of a cache inside the structure were removed and an intense fire was lighted within the cache chamber prior to the collapse of the vault (ibid:62)

Operation 9

This 2 x 1 meters test pit was located at the base of the east side of Structure S4W1-2 (figure 79). This structure has Early Classic architecture, as seen in an Izamal-style megalithic stairway. The purpose of the excavation was to obtain a sealed Early Classic lot. However, no sealed Early Classic lots were found (Kashak 2002a:72, 76).

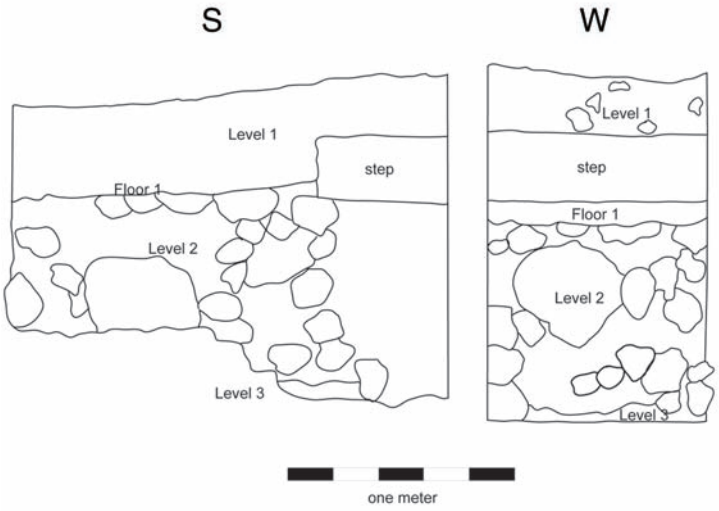


Figure 79. Operation 9 at Yo'okop.

4.3.2. Group B

This group is located north of Group A, connected by Sacbe 1. It is the largest group at Yo'okop, measuring 400 meters (N-S) and 250 meters (E-W). It has substantial pyramids and range structures, two acropoli, a ballcourt, three carved monuments and fortifications (figure 80).

Sacbe 1 broadens on the way from Group A to Group B. There is a L-shaped entrance from Sacbe 1 to a 75 x 50 meters large plaza west of the Central Acropolis. Several albarradas and a stepped parapet encircle this plaza. These are late additions since they block the L-shaped entrance from Sacbe 1 (Shaw, et al. 2000:38).

The northern terminus of the causeway is defined by the southern edge of Structure N5W1-3, a long range structure (55 x 20m) on top of the Central Acropolis (N5W1-1). Their combined height raises the range structure ten meters above the plaza. Structure N5W1-3 was later covered by a small foundation brace (Structure N5W1-5) and a Postclassic shrine (Structure N5W1-4). The Postclassic shrine has a doorway with a recessed lintel that spans the opening. There are two columns on each side of the doorway. It is a one-room building constructed in East Coast style (ibid:44). It has cut stones that probably derive from Terminal Classic buildings. Narrow steps lead down the eastern face of the structure, beginning at the Postclassic doorway. The northern edge of the Central Acropolis ends just beyond Structure N5W1-3 and the pyramidal Structure N5W1-6. Even this pyramid has a Postclassic shrine on its summit. The south side is bordered by Structure N5W1-2. The eastern side of the plaza consists of Structure N5W1-7, which also marks the western end of a smaller plaza. This eastern plaza is divided into two zones by small architectural features. Beyond this area, there is a steep drop of the acropolis, down to natural terrain (ibid:33). Northeast of the Central Acropolis is a 2.5 meters high mound, Structure N6E1-1.

The ballcourt of Group B (Structures N5W2-6 and N5W2-7) is located northwest of the Central Acropolis (figure 8). A ballcourt ring was detected in the middle of the eastern slope of N5W2-6. The parallel structures are unusually short and high (30 x 25 x 6 meters). The playing alley was probably five to six meters wide and there are no demarcated endzones. The dimension of the ballcourt is similar to the two ballcourts at Coba. Both structures of the ballcourt are topped by

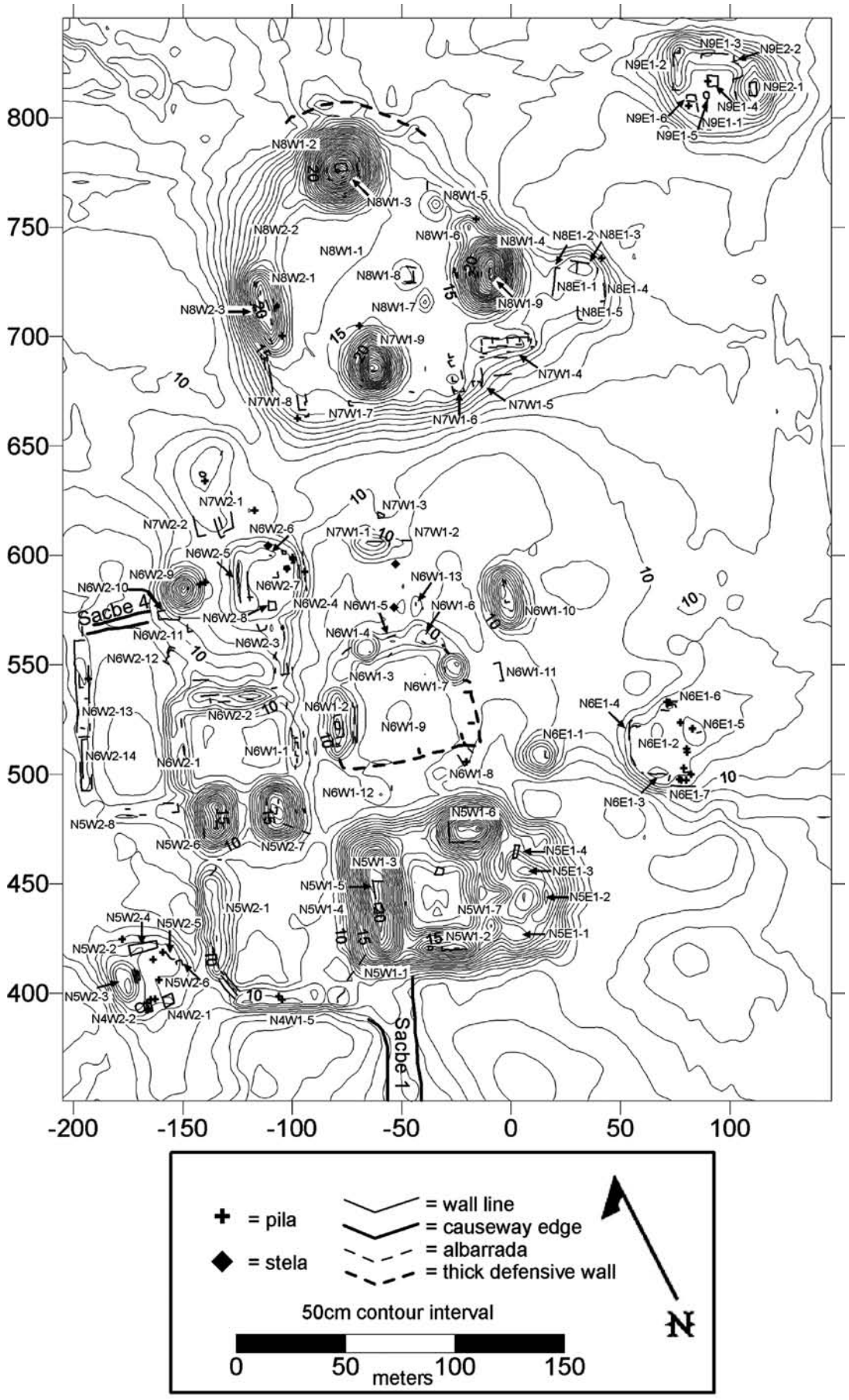


Figure 80. Group B.

small Postclassic shrines (Shaw 2001d:24).

There are three fortified portions of Yo'okop, all located in Group B. The fortification walls in the southern part of Group B are steep and the stepped rampart walls are similar to other northern fortifications (Webster 1979). It is preserved up to two meters in height and it is three meters wide. These do not all seem to have been hastily constructed as they may have been at Chunchucmil or Yaxuna (Ambrosino, et al. 1997; Dahlin 2000). The walls consist of a thick rubble core which has been enclosed by a wall consisting of dry-laid and roughly-quarried stones. The fortifications are not continuous and include earlier buildings (Shaw, et al. 2000:45).

West of the Sacbe 1 terminus is an albarrada that runs down from an area near the summit of Structure N5W1-3, continues to the southwest and links up with a long construction, Structure N4W1-5 (ibid:33). This two to three meters high construction lacks wall lines and summit superstructures. North of this construction is a cluster of unshaped rocks, 0.2 to 0.3 meters in diameter. The western end of the broad wall is linked to a 65 meters long platform (Structure N5W2-1) that supports a foundation brace. A 45 degree angled "bridge" between these structures consists of a stout wall containing a thick step that is located along its interior (northeastern side). It is believed to be a fortification wall. An albarrada from this wall runs halfway up the height of Structure N5W2-1. The albarrada ends on top of the structure. It is believed to have ended at a perishable defensive structure. An albarrada on Structure N5W2-7 (part of the ballcourt) encloses the fortified plaza west of the Central Acropolis (Shaw 2001c:29). No new architecture covered the fortifications and they were not dismantled. Therefore, they must be late in the site's chronology. However, there is little evidence of Terminal Classic architecture in Group B (Shaw, et al. 2000:38).

Two other walled zones have been encountered. One is found around a plaza north of the Central Acropolis. This plaza is encircled by albarradas and low walls that most likely supported palisades. The walls extend inward from the palisade base at four places. Structures surrounding the plaza were part of the fortification. Only the round Structure N6W1-9 is excluded. These fortifications are also late since they overlie older buildings that have not been dismantled. This fortification seems to have been constructed in a hastier manner than the first one. Another fortification was found north of Structure N8W1-1, or the Northern Acropolis. North of Structure N8W1-2, there is a large wall that restricts the access to the acropolis. The ends of the wall do not form a sealed barrier and may indicate that it was never finished or that the lacking portions were made up by perishable materials (Shaw 2001c:29).

These three fortifications seal off different portions of Group B but leave other areas open. They are not particularly set to protect the monumental area. The buildings may have provided protection in themselves or their size made them impossible to fortify due to limited resources or lack of time (ibid:29).

The Northern Acropolis of Group B is called Structure N8W1-1 and it is similar in layout to the Central Acropolis. The western side of the acropolis has the only range structure, Structure N8W2-1. The other large buildings in this acropolis are the pyramids N8W1-2, N7W1-9 and N8W1-4. These pyramids and range structure have each a freestanding Postclassic shrine. The three on the pyramids have a set of narrow Postclassic stairs. The three pyramids are 12 to 14 meters above the central plaza of the acropolis and the range structure is about six meters high. There are several smaller foundation braces around the acropolis (ibid:24).

Apart from the monumental architecture, there are also larger residential platforms in and around Group B. In the southwest corner of the group is Structure N5W2-2 which contains one large and elevated residence (Structure N5W2-3) and five smaller constructions. A similar arrangement has been found on Structure N6E1-2, which is located northeast of the Central Acropolis in Group B. It has many metates, a larger elevated southern building (Structure N6E1-3) and four smaller foundation braces. Northeast of Group B is the platform N9E1-1 with large

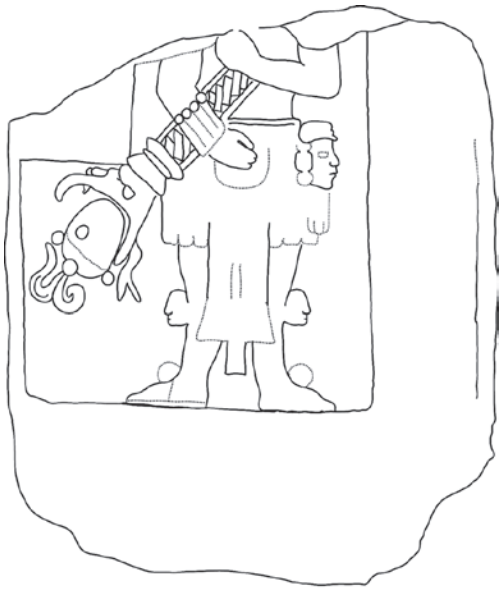


Figure 81. Stela 1 at Yo'okop.

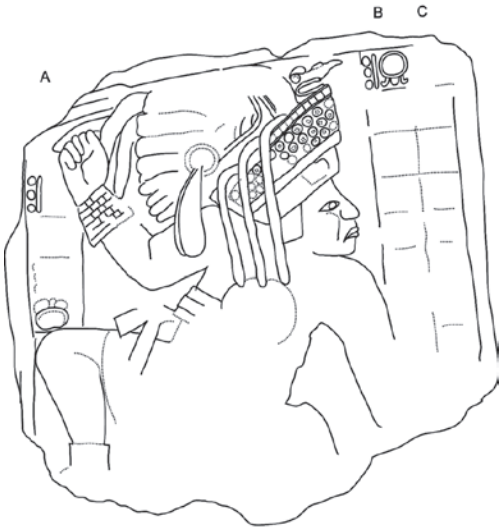


Figure 82. Stela 2 at Yo'okop.

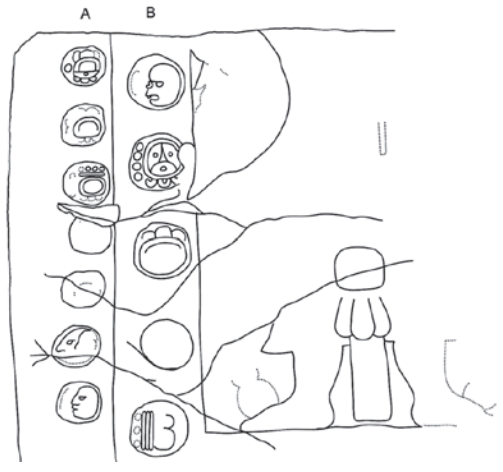


Figure 83. Stela 3 at Yo'okop.

residences, which is dominated by Structure N9E2-1. Smaller foundation braces and metates were found across the platform (ibid:21). East of Sacbe 4 and the six meters high pyramidal Structure N6W2-9, is Structure N6W2-4, which is a residential platform where Structure N6W2-5 dominates. There are also scattered metates and foundation braces on the platform.

There are three carved monuments in Group B. They are all called stelae, but Stela 2 could have been a wall panel at the ballcourt. They are all of similar size, roughly 1 meter tall, 1 meter wide and 0.3 meter thick. Stela 1 is found in the plaza between Structures N7W1-1 and N6W1-4. It appears to be early Late Classic (figure 81). The monument is broken and the upper portion is missing. The front side has a standing male figure who holds a double-headed serpent bar diagonally across his chest (Wren, et al. 2001:82). The double-headed serpent bar is often depicted on monuments related to Period Endings, such as k'atuns (Miller and Taube 1993:58-59).

Stela 2 is located on Structure N6W2-6 (Wren, et al. 2001:85). It is more likely a ballcourt monument since it has a horizontal composition (Wren et al. in press). No date could be detected but based on stylistic criteria it is a Late Classic monument (figure 82). The front is carved with a human figure that is kneeling with one leg on the ground and an upraised arm, which is a common motif of Classic period ballplayers. The ballcourt is located 100 meters to the south of the present location of Stela 2. The figure wears a wide ballplayer's yoke around his waist. Mosaic wristlets, depicted on this figure are common on the clothing worn by elites at Chichen Itza. The figure has a headdress in the shape of a bird. It may be a version of the Xiuhtototl brow piece depicted in several relief sculptures at Chichen Itza (Shaw, et al. 2000:61). The authors believe this form of headdress at Yo'okop is antecedent to the brow pieces at Chichen Itza (Wren, et al. 2001:88).

Stela 3 is located in a plaza between Structures N7W1-1 and N6W1-4. It is Late Classic based upon stylistic and iconographic attributes (figure 83). The front side has a carved standing human figure. The hieroglyphic Column B could record calendrical information. The main figure has a frontal pose, but the upper torso and above is no longer visible. The figure wears a skirt and loincloth. A fish may have been carved in the extreme upper left hand corner, sometimes found in a headdress associated with the Water Lily Monster. These headdresses are used in Period Ending

rituals (Wren, et al. 2001:91). There is a common inclusion of watery images in all carved media at Yo'okop (Wren and Nygard 2005).

Sacbe 4

This short causeway is only 30 meters long, 5 meters wide and 0.2 meter high and has an alignment of 281 degrees. It is located in the northern part of a plaza group, consisting of Structures N6W2-13, N6W2-14 and N5W2-8 (figure 80). Its southern edge is not straight. The causeway runs at an odd angle, not consistent with the rest of the plaza. The angle between Sacbe 4 and the other structures in the plaza is not 90 degrees. It connects the north end of Structure N6W2-13 with a platform that extends from Structure N6W2-9. This indicates that the causeway was constructed after these structures had been constructed (Shaw 2001d).

The causeway seems to have been constructed in at least two sections. Halfway along the length there are two internal walls that run perpendicular between the sidewalls of the causeway. The walls are spaced 0.15 meter apart and cross the whole width of the causeway. This causeway did not receive the top level of gravel and saskab. This could reflect a pause in the construction or that the causeway was constructed by two different work parties. There may be an unfinished extension of this causeway since there are thin and well-spaced stone lines that extend roughly 1.5 meters to the east from where the road currently ends. These wall lines continue toward what would have been the centre of the causeway, but the two lines never meet. There was never any construction fill in this part of the road (ibid:27).

Operation 1

This 2 x 2 meters test pit was located at the north end of Sacbe 1 where the causeway broadens into a plaza, directly south of the Central Acropolis of Group B (figure 84). Level 1 consisted of Late and Terminal Classic ceramics. Level 2 had a badly fragmented plaster floor (Floor 1) on top of a gravel fill. Only a single Terminal Classic Muna sherd was found. The plastered Floor 2 was found in Level 3. This floor has apparently been repaired in the past, since there were overlapping patches of plaster. One meter of dry core fill was laid out as the foundation for Sacbe 1. The sherds from this core were mixed. The youngest sherds date to the Terminal Classic.

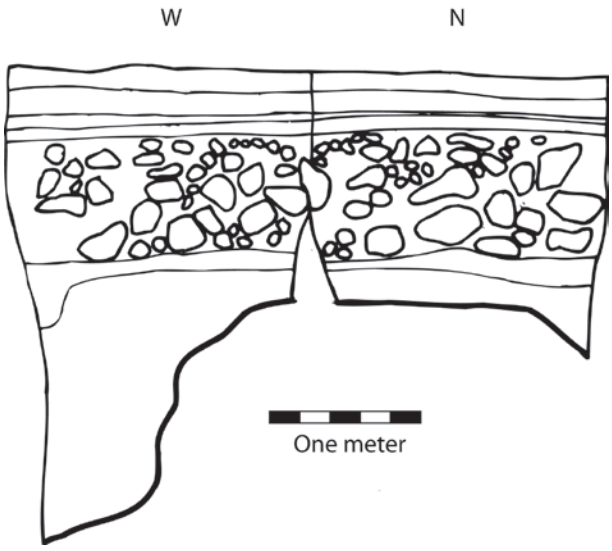


Figure 84. Operation 1 at Yo'okop.

Level 4 consisted of gravel in chac luum that lay over the bedrock. The upper meter had two 0.40-0.50 meter deep postholes and some rocks affected by heat. The ceramics here were both Late Formative and Early Classic. The middle and the lower lot contained Middle and Late Formative ceramics. The floors indicate a Terminal Classic date for the construction of Sacbe 1, but there may have been an Early Classic perishable structure where the post holes were found (Johnstone 2001b:36).

Operation 2

This 2 x 2 meters test pit was located in the main plaza of the Central Acropolis (figure 85). The Late Formative sequence indicates the presence of two masonry platforms with plaster floors. No traces of Early Classic constructions were found. Most of the construction in the Central

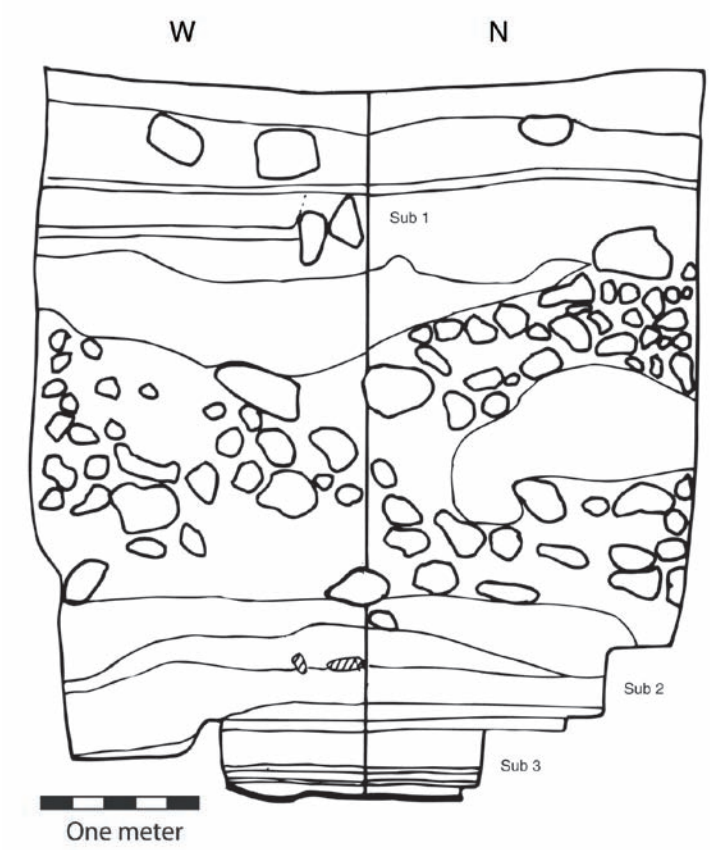


Figure 85. Operation 2 at Yo'okop.

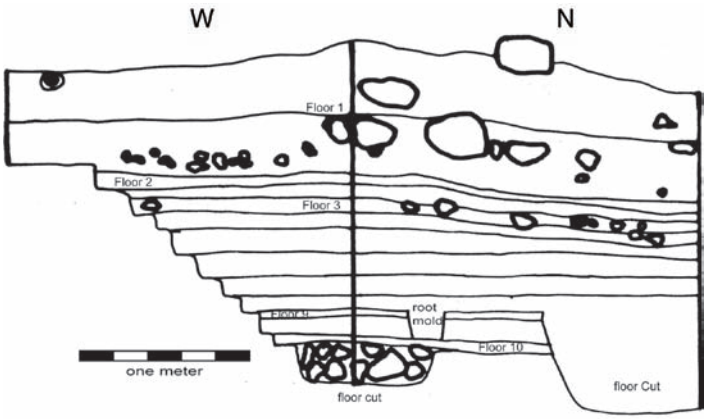


Figure 86. Operation 8 at Yo'okop.

Acropolis took place during the Late Classic. The plaza was raised 2.4 meters in one construction period, and capped by a platform that also was remodelled during the Late Classic. Terminal Classic sherds are found with collapse debris which may indicate that this part of the site either fell into disuse or was destroyed during this period. There is also a lack of Postclassic material. There are traces of termination activity when the Late Formative structures were either remodelled or buried. Traces of burning were located, either as a light smoking (sub-1 and sub-3) or substantial burning (sub-2). The plastered upper surfaces had been removed before the structures were buried (Johnstone 2001b:42-44).

Operation 8

This 2 x 2 meters test pit was placed in the Northern Acropolis of Group B, right in front of Structure N8W1-3 (figure 86). This test pit did not reach bedrock for safety reasons. At least five flooring episodes took place during the Late Formative which raised the Northern Acropolis by 0.5 meter. Three flooring episodes date to the Early Classic, a total of 0.4 meter in height. Finally, two floors were laid during the Postclassic, raising the acropolis another 0.4 meter. Six of these ten floors were plastered. All of these had been modified after construction, probably as part of termination rituals before the new flooring episode. Since this locality had been burned over a long time, these activities may have been associated with events taking place on or in front of Structure N8W1-3. This could also mean that the pyramid has multiple layers of construction. There are no indications of an occupational hiatus at this particular location during the Early Classic, but rather in the Late and Terminal Classic (Johnstone 2002b:71).

4.3.3. Group C

This group consists of only one known pyramid and it has only been briefly visited (figure 87). There is a large saskabera on the northwestern side of the acropolis upon which the roughly nine meters high pyramid is located. The summit of the pyramid measures 3 x 4 meters. There is a depression on the summit, either from looting, from a tree fall or from a collapsed vault. The

western slopes of the platform upon which the pyramid is built are about five meters high. This makes the whole acropolis roughly 14 meters high (Lloyd 2002:25-26; Wilson 1974). It is not known if the pyramid is older than the causeway, like the triadic causeways at Ichmul, or if it is contemporaneous and symmetrical with the causeway like the aligned causeways at Ichmul.

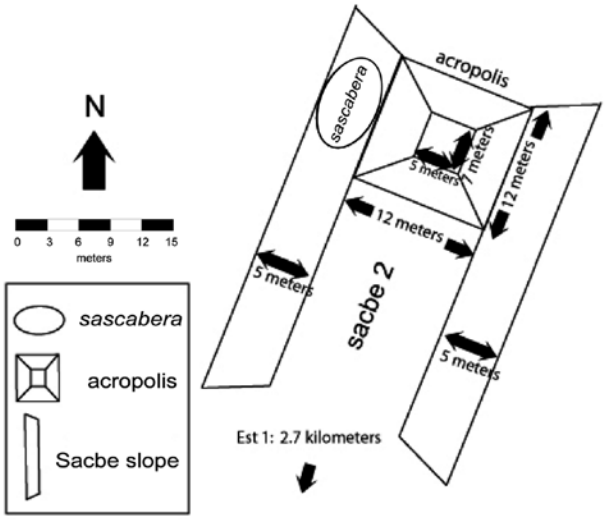


Figure 87. Sketch map of Group C.

Sacbe 2

Sacbe 2 has never been mapped with a total station. Lloyd (2002) and local informants made a GPS survey and sketch map of this causeway (figure 88). On Wilson's (1974) sketch map of Group B, Sacbe 2 had its origin in the northern edge of the Northern Acropolis (Shaw 2001d:27). However, the origin of the causeway in Group B is still unknown, probably due to the removal of material for albarradas and/or fortification constructions. The present origin of Sacbe 2 in Group B is outside the northern fortifications. The causeway has a bearing of 23 degrees east of the magnetic north. The causeway is roughly 1,800 meters long and 12 meters wide.

Saskaberas were found along the causeway, with a concentration along the northwest part of the causeway. An albarrada was found northeast of Group B. Stones appear to have been removed from the causeway to construct the albarrada(Lloyd 2002:21).

The most interesting feature of Sacbe 2 is a vaulted passage that bisects the causeway, about 800 meters north of the Northern Acropolis (figure 89). It has two entrances opposite each other. They seem to be trapezoidal and are found one meter beneath the surface of the causeway. Only one meter of the top of the approximately three meters high vault is exposed today. The vaulted ceiling is layered in five steps that are supported by the walls. There are large flat capstones in the ceiling. The lateral sides of the stones that make up the interior vault walls seem to be unmodified and are aligned in rough courses. The interior walls lack traces of stucco or plaster. This architecture is similar to early Puuc construction style at Oxkintok, which means that the base moulding was simple or not present at all. Walls were made out of rough block masonry, rough slab vaults with steps, and sloped upper facades (Andrews

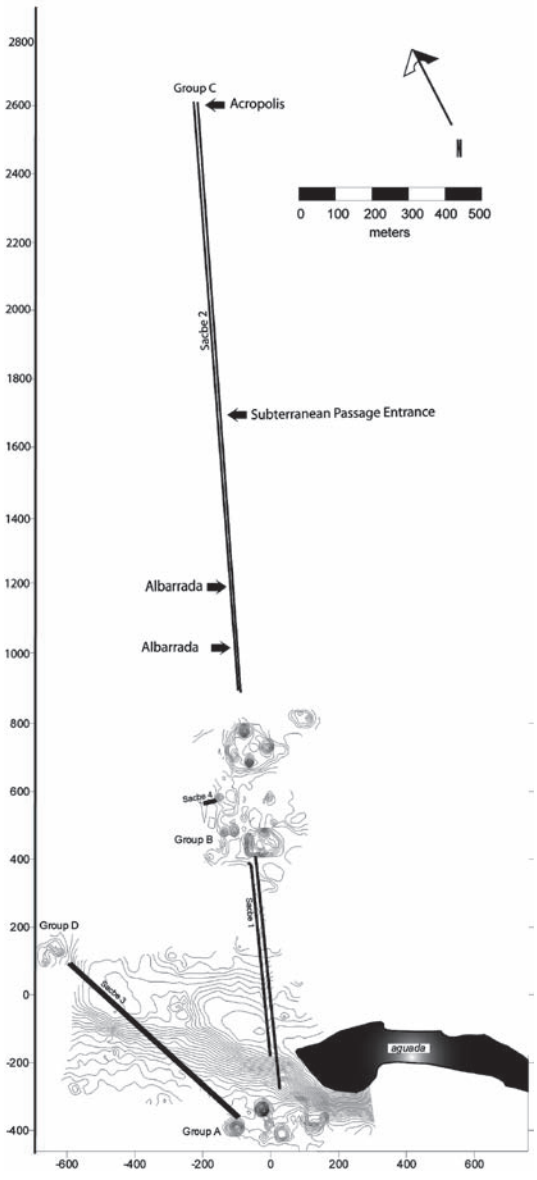


Figure 88. Sacbe 2

Figure 89. The vaulted passage below Sacbe 2.

1942:257-262; Pollock 1980:584). Stepped vaults are widespread in the Northern Lowlands during the Late Classic. They have been found at Group B of Coba, and at several Puuc sites (Taube 1995:35). It is not known if the stepped vaulted structure is much older than the causeway, and thus built over, or if it was part of the construction of the roadway (Lloyd 2002:23). A similar pattern of constructing over an earlier structure has been seen along the Coba-Yaxuna causeway. It passes over a five meters high truncated pyramid, about five kilometers west of Coba (Villa Rojas 1934:200). This causeway also passes over a structure, one kilometer east of Yaxuna (Shaw, personal communication 2006).

4.3.4. Group D

Group D is located 700 meters northwest of Group A (figure 90). Sacbe 3 links the two groups. Group D measures only 70 meters (N-S) by 100 meters (E-W) and consists of 19 structures, none of which reaches above 6 meters in height. Thus, the area lacks the monumental architecture found at Group A, B and C. Although it is connected to the rest of the site, the architecture does not share the 25 degrees east of north angle, as seen at other places at Yo'okop. For these reasons, it has been argued that Group D could have been inhabited for a special purpose or by a special-status contingent (Shaw 2001e:31). Its late date may be another explanation (Shaw, personal communication 2006).

The plaza that is formed by the two largest range structures of the group is roughly aligned at 30 degrees west of north. The range structures N2W7-1 and N2W7-8, found south and west of N2W7-3 form an unusual angle of 105 degrees. A plaza west of Structure N2W7-8 and its surrounding buildings has an angle completely different from the larger structures of Group D. Structures N2W7-11, N1W7-1 and N2W7-12 are other structures forming a differently aligned plaza. Plenty of small Postclassic shrines have been found on top of the structures of Group D, three on top of Structure N2W7-13, one on Structure N2W7-12 and a fifth on Structure N2W7-1 (ibid:31).

The southern part of the group sits on a platform or a terrace that raises the area, but it levels out with the terrain further to the north. The edge of the platform has clear wall lines along the eastern side and the northeast corner, around Structures N2W6-3 and N2W6-4, the northern edge and the area west of Structure N2W7-13. There are foundation braces without large substructures surrounding the main structures of the group. Small saskaberas were found north of the mapped area. The tallest building in Group D is Structure N2W7-3. It is a fairly circular pyramid, about 20 meters in diameter and 6 meters high. There are traces of the foundation of a perishable superstructure (ibid:31).

The residential mapping of the area between Sacbe 1 and Sacbe 3 located 122 structures, including 27 platforms, two terraces, 88 foundation braces, five vaulted structures, two chultuns, and five chich mounds (figure 91 and 92). Several albarradas were also recorded. The smallest

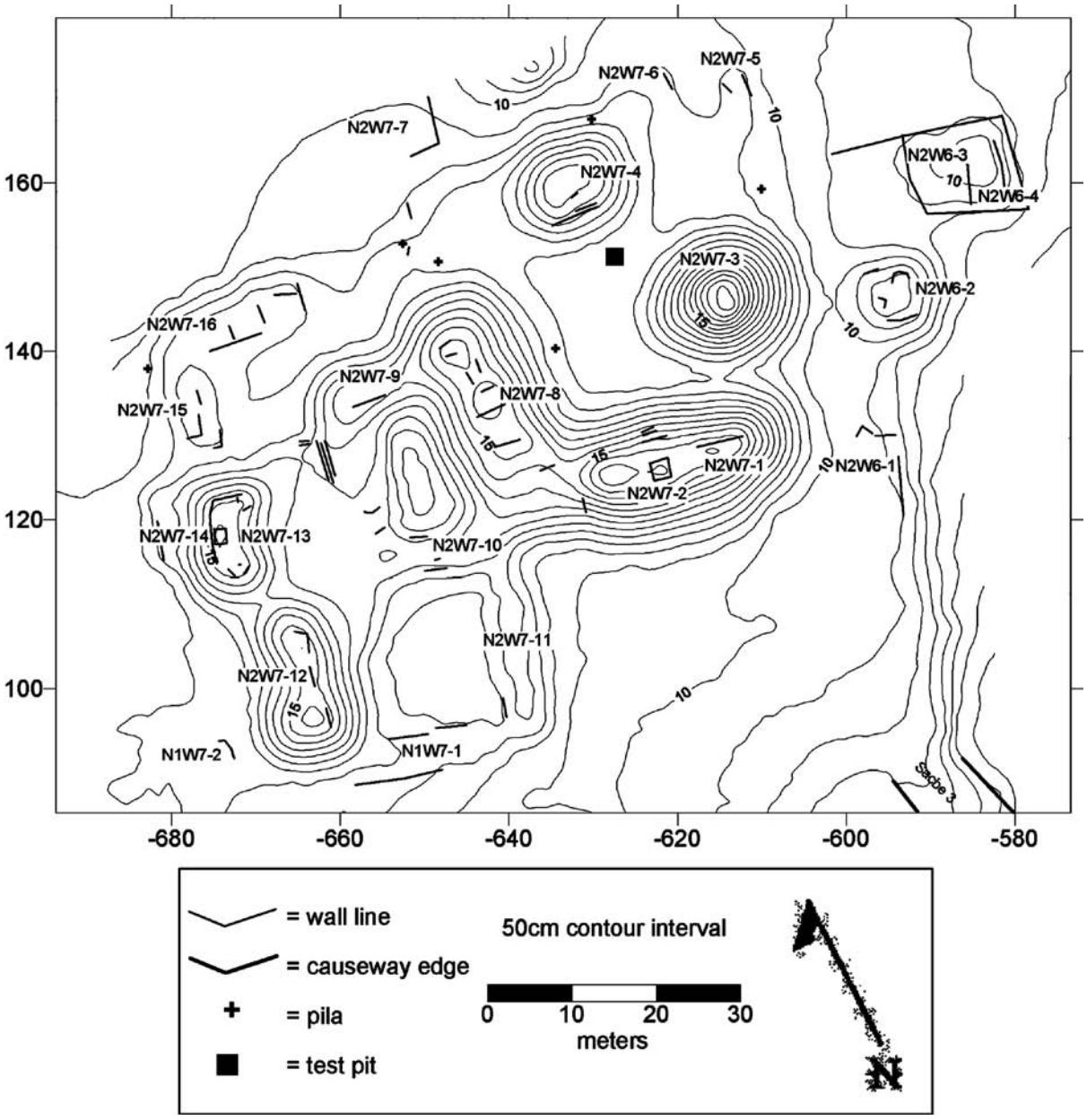


Figure 90. Group D.

structures were probably corncribs or kitchens. Between Group A and the modern dirt road there are not many residences due to the steep slope. The lowest lying areas also lack a greater number of structures, since these have the deepest, richest and wettest soils. These areas were most likely saved for agriculture. Most residences were built on top of raised areas or stone outcrops (Johnstone 2002c).

Sacbe 3

This causeway is 690 meters long and runs in an angle of 338 degrees and connect Groups A and D (figure 93). It is cut by the modern road between Saban and Dzoyola. The faces of the causeway consist of fairly coarsely shaped stones. These have been set in marl mortar. The lower courses are made from large thick stones which have been set vertically. The upper courses have smaller tabular stones which have been set horizontally. In between the faces there is a core of dry-laid graded fill. The surface consists of gravel chich that would have supported a road bed of saskab and/or plaster (Johnstone 2001c:34).

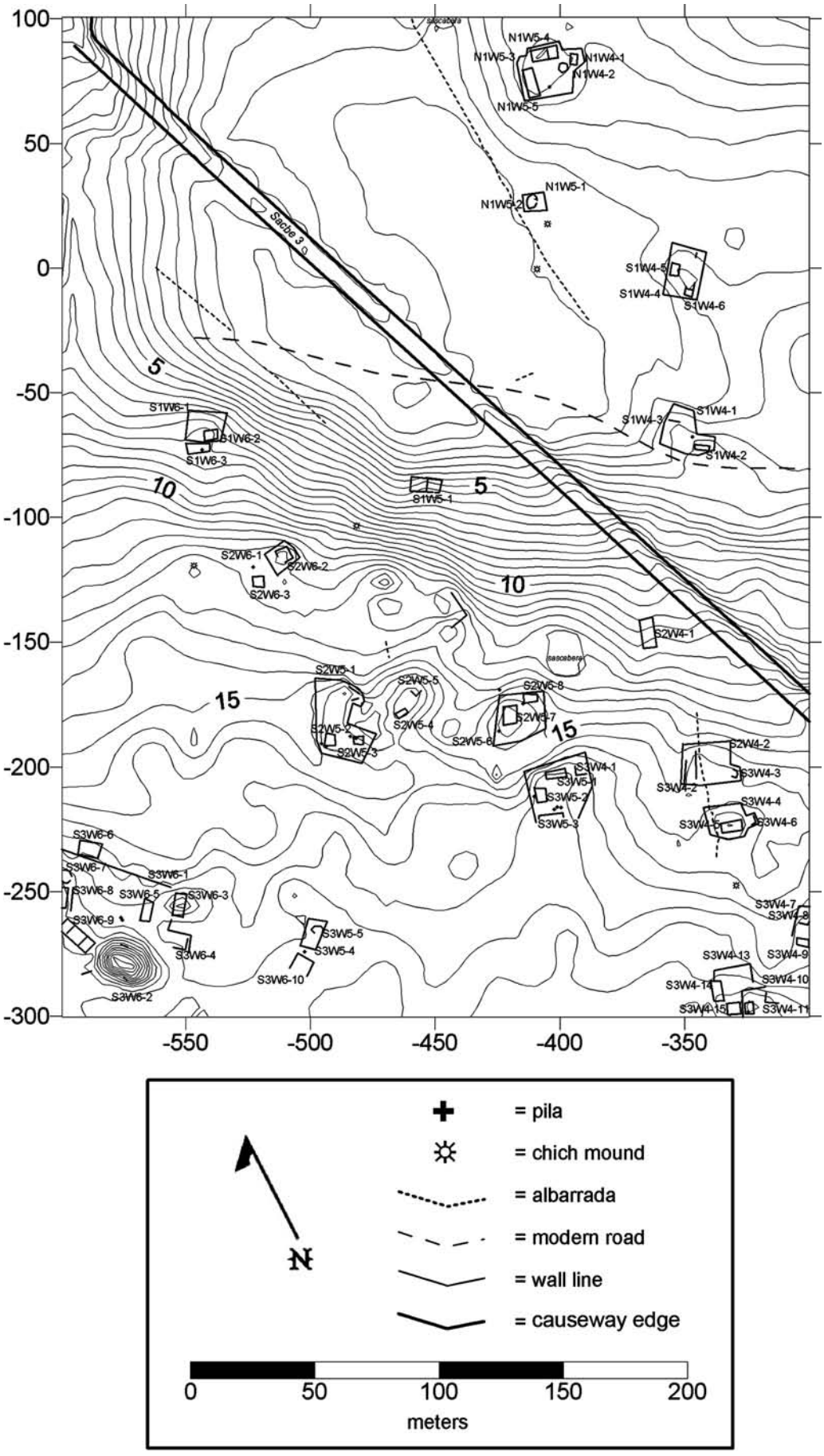


Figure 91. Residential area between south and west of Sacbe 3.

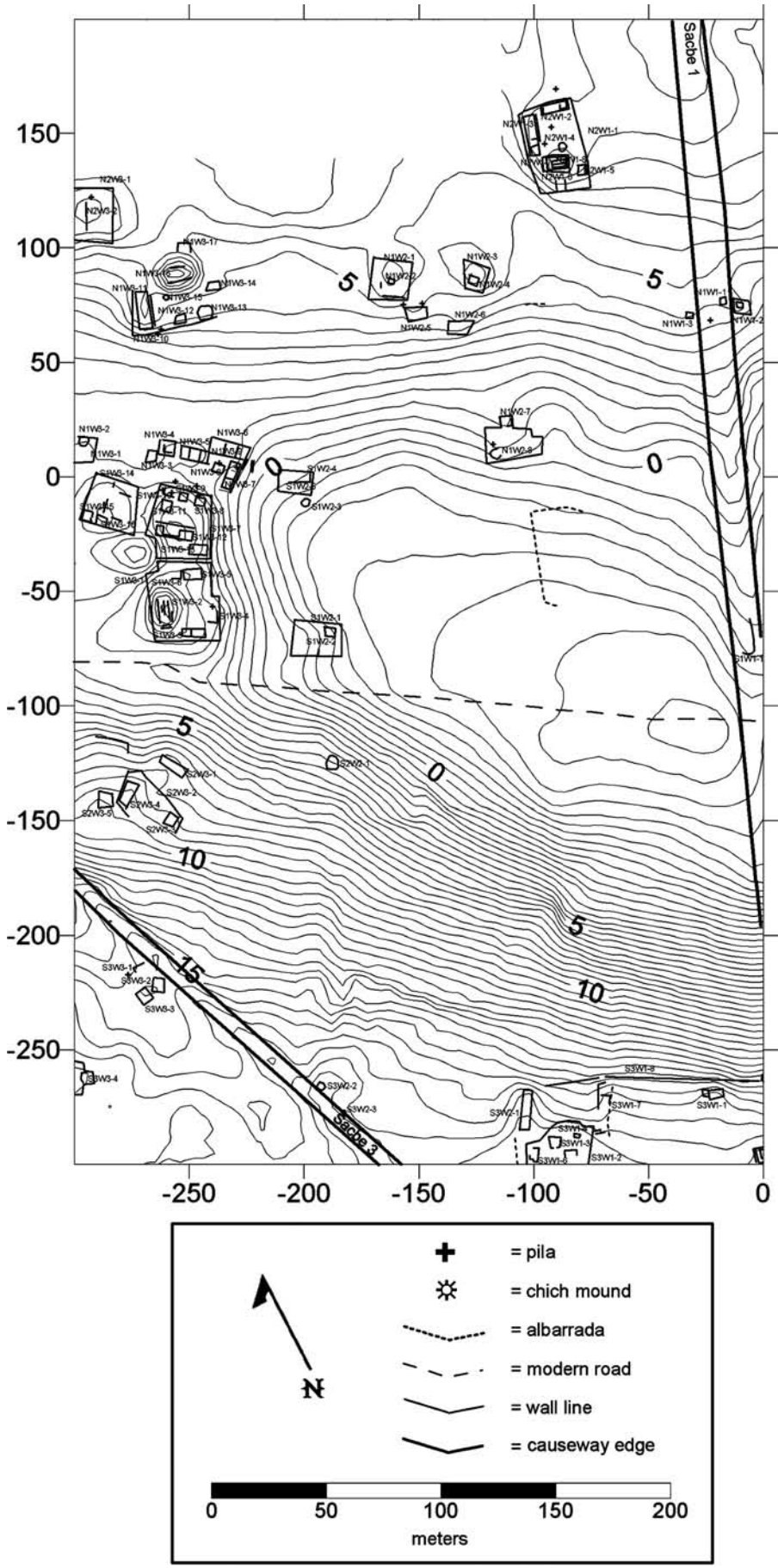


Figure 92. Residential area between Sacbe 1 and Sacbe 3.

Figure 93. Sacbe 3 at Yo'okop.

Sacbe 3 is seven meters wide and is therefore narrower than Sacbe 1 and 2. It runs along the side of a slope, so that its eastern side is higher than its western side, a height that varies between 0.1 and 2 meters. Twelve meters southwest of Structure S3W2-2, there is a set of steps that make it possible to get access to the causeway from the outside before its termination in Group A. The stairs are located at a break in the slope that is the beginning of Group A. The causeway has been built over a residential platform (ibid:34).

There might be stairs under the collapsed debris from the causeway. This would mean that the causeway served the adjacent structures as well, apart from connecting the major architectural groups (ibid:34).

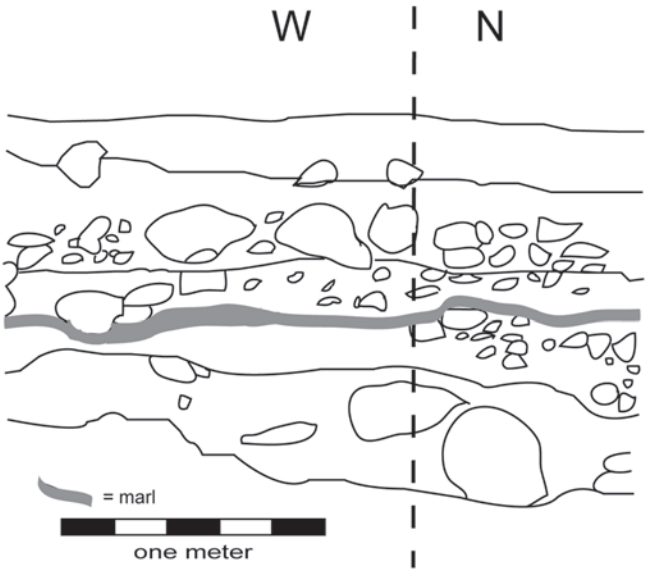


Figure 94. Operation 4 at Yo'okop.

Operation 4

This 2 x 1 meter test pit was located in the plaza to the west of Structure N2W7-8 (figure 94) (Shaw 2001h:47). It was believed that the different layout of Group D either meant that it was early in the history of the site, or that it was an important faction within the socio-political organization of the site. The excavation detected two to three plaza floors which contained ceramics from the Late Formative to the

Terminal Classic. The floor constructions appear to be relatively late in the sequence of the site. Numerous small chert flakes, obsidian, and ceramic sherds indicate that the plaza may have been used as a work area (ibid:51).

Operation 7

This 2 x 1 meter test pit was set up to investigate what could have been a chultun, found in the middle of the main plaza of Group D (figure 95). There seemed to be a circular feature, 0.9 meter in diameter, with cut veneer stones surrounding it. However, it was not a chultun. A small plaster fragment and the presence of a chich layer indicated that there might have been a floor. The ceramics were Terminal Classic and Postclassic. The circular feature was constructed on top of a plaza surface that may have been in disrepair. The feature may have been a Postclassic masonry altar located in front of the central axis of Structure N2W7-4. It was damaged by a hole that was cut through it and the plaza below (Johnstone 2002b:64, 67).

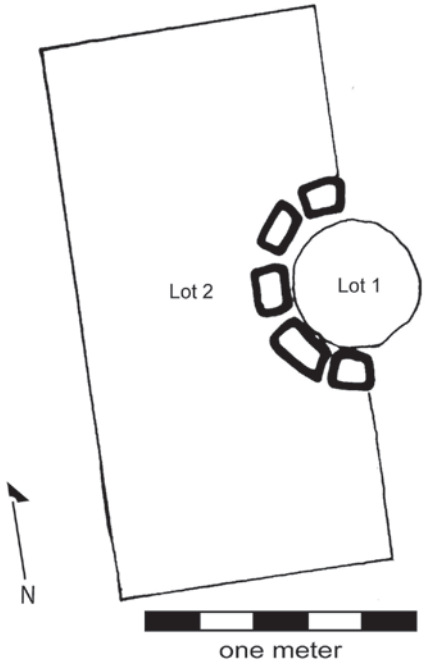


Figure 95. Operation 7 at Yo'okop.

5

Virtual ideology, phases and networks

5.1. Polyagentive assemblages at Ichmul and Yo'okop

As argued in Section 3, the static classifications and models should and will be replaced by a symmetry-breaking virtuality and the individuating process that I call polyagency. I choose to focus on five local polyagentive assemblages at Ichmul and Yo'okop that emphasize the causeways (table 5). These are not pure patterns since all causeways are connected to different polyagentive phyla, œuvres and networks. Still, there are some patterns that are shared and not shared by the various causeway assemblages that relate both to actual and virtual ideologies. What unites these different assemblages will be explained in the following chapters. The assemblages are:

- Assemblage A: Triadic causeways (Xquerol, San Juan and San Andres)
- Assemblage B: Aligned causeways (San Cristobal and San Pedro)
- Assemblage C: Beads-on-a-string causeways (Sacbe 1 and Sacbe 2)
- Assemblage D: Non-aligned causeway (Sacbe 3)
- Assemblage E: Unfinished causeway (Sacbe 4)

Assemblage	Causeway	Point of origin	Align-ment	Average width and height (m)	Current length (m)	Maximum length (m)	Minimum volume (m3)
Triadic	Xquerol	Central Acropolis	193	13 x 0.8	2530	2960	26310
Triadic	San Juan	Eastern Acropolis	68	13 x 0.7	1650	2730	15015
Triadic	San Andres	Structure 5	162	13 x 0.7	2640	2940	24025
		San Pedro Causeway				2820	
Aligned	San Cristobal	Great Plaza	18	6.5 x 0.5	910	1310	2960
		Central Acropolis				1430	
Aligned	San Pedro	San Andres Causeway	140	6 x 0.25	1100	1480	1650
		Central Acropolis				1600	
Beads	Sacbe 1	Group A - Group B	20	12 x 0.7	718	718	6030
Beads	Sacbe 2	Group B - Group C	23	12 x 0.7	1800	1800	15100
Non-aligned	Sacbe 3	Group A - Group D	338	7 x 0.7	690	690	3380
Unfinished	Sacbe 4	Group B	281	5 x 0.2	30	30	30

Table 5. The causeway assemblages at Ichmul and Yo'okop. Alignment is degrees east of north.

There are two different assemblages of causeways and termini around Ichmul. For Yo'okop, there are mainly two assemblages, apart from the unfinished Sacbe 4. These assemblages probably relate to different construction phases, different series of people and actual ideologies. These patterns cannot be differentiated by using Shaw's typology which is based upon length and statistical

differentiation between sites across the whole Maya area (Shaw 2001g; in preparation-a). Neither can the causeways of the Cochuah region be differentiated by function. The most important correlations are the relations between length, width and height of these particular local polyagentive assemblages, the straightness of the causeway and the alignment between causeways, plazas and vertical buildings. Thus, I am not approaching the causeways from a regional or an interregional perspective. It is on the local level that analyzable patterns among a "population" of causeways can be seen.

I will use the "traditional" terms causeway, pyramid, range structure, etc. in the following chapter. These concepts relate to their form rather than their assumed function or past meaning.

5.1.1. The triadic assemblage

Each of the three largest causeways at Ichmul, San Juan, San Andres and Xquerol forms a triadic assemblage that consists of a shared central point of origin with the other two triadic causeways. It has a wide and straight road bed, a substantial termini area that is non-aligned with the causeway, one large and older central structure with two smaller flanking structures (figure 96).

The Colonial sources mention a cenote mouth in central Ichmul. This indicates a funnel-shaped cenote or a modified cenote. In nearby Chikindzonot the mouth of the cenote has been covered up in modern times, leaving only a ventilation shaft (Flores and Normark 2005b). There are known occasions when even cave entrances have been reduced in size, such as Aktun Haleb in the Yalahau region (Rissolo 2004:353). In Ichmul, there is a water tower approximately 80 meters west of the ideal triadic causeway intersection area. There are also deep but now dry wells in the monastery. This confirms the existence of water in the vicinity. The 19th century white church may stand upon a funnel-shaped cenote, as this is where the projection of the causeways would have intersected. This feature would have been important since it was from there the triadic pattern was designed. The size of the church makes it possible for a cenote to be located below and within the walls of the church. This means that the roof of a possible cenote would not have to bear the weight of the church walls (Flores and Normark 2005b:96).

Like the aligned causeways, the triadic causeways join central Ichmul with outlying settlements, but in a different manner. The causeways to Xquerol and San Juan have platform extensions, roughly halfway along their length. If this also existed along the San Andres causeway is not known since only one side has been surveyed. At the outlying settlements there are substantial termini plazas where each triadic causeway ends. The causeways enter the plazas at angles that are off the expected 90 degrees. The termini plazas are located behind the largest structure at each site. Test pits excavated in two of these large termini plazas (San Andres and San Juan) point to a single construction period at some time during the Terminal Classic. However, the plazas are aligned with those larger existing structures in a manner suggesting that the plazas are slightly older than the causeways, but most likely still part of the same construction project (ibid:82-83). The stairways of each of the largest structure at each of the three sites face in the opposite direction of the causeway, to another plaza or to an area with other structures.

At San Juan and San Andres, the termini plazas have two smaller mounds located on their eastern and western sides or corners. These two structures are of unequal size compared to each other. They appear to be part of the termini plaza construction phase or they are later additions, forming a triadic pattern with the larger and older structure. Xquerol may also have had this arrangement, but portions of the site have been affected by later settlement. Structure N1E1-2 in Xquerol may have been the eastern structure, with the western and smaller structure possibly obliterated by the construction of the modern road or a house.

San Andres has indications that the corner structures were later additions, since the plaza was further extended to the north and west. This could mean that, originally, the structures south of the northeast corner structure were the corner structures of the older plaza. However, there might

not have been any corner structures since the causeway originally entered the northwest corner of the older plaza. An alternative interpretation is that the plaza extension occurred during the construction, when constructors may have decided to enlarge the plaza after it already had been designed. In any case, the San Andres causeway may have been the first of the triadic causeways, with the other two causeways following its design and with the other two triadic structures added at a later time.

Another similarity is the presence of small structures directly to the sides of the San Juan and San Andres causeway-plaza intersections. These are lacking at the termini of the aligned causeways.

Test pits excavated in two of the three termini plazas (San Juan and San Andres) show a Terminal Classic date for the construction, but there are ceramic traces of earlier settlement. Xquerol has Late Formative and Terminal Classic plaza floors that are not in the terminus area (Normark 2003b). It is believed that the Xquerol causeway is Terminal Classic rather than Late Formative due to the mixed lots within Operation 1 at Ichmul. A surface collection from one of the cut parts of the Xquerol causeway indicates a Terminal Classic data (Johnstone 2006:1).

Thus, the homogeneity in layout, sizes and dates of these three causeways suggest they each form an assemblage distinct from the aligned causeways at Ichmul.

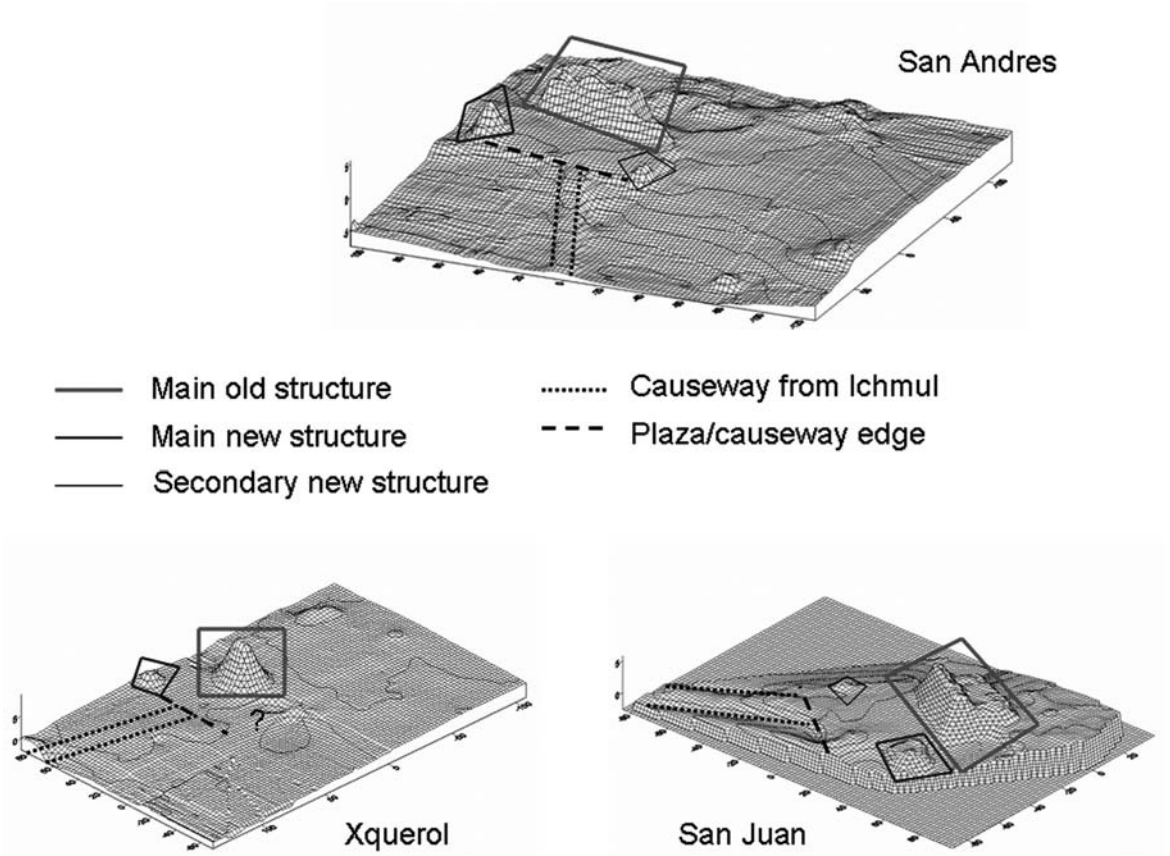


Figure 96. Comparison of the triadic termini.

The specific similarities between the triadic causeways in question are:

- The causeways have the same area of ideal origin in central Ichmul which today is covered by a white church. The white church can be seen from all the main termini structures.
- The places where the three causeways maybe originated are close to Ichmul's three

pyramidal structures. The Xquerol causeway could have begun near Structure S2W1-3, the San Andres causeway could have begun near Structure S1E1-1 and the San Juan causeway could have begun near Structure N2E3-1.

- The causeways appear to be single phase constructions.
- The causeways have similar width, height and length.
- A small platform extension exists halfway along the course of the causeways to Xquerol and San Juan. Its presence along the causeway to San Andres is unknown.
- The causeways and their termini plazas appear to have been constructed in a joint effort.
- A low platform or foundation brace sits near two of the triadic causeway/termini plaza intersections. Its presence at Xquerol is unknown.
- The termini are all dominated by one major structure and a large plaza which are not in right angle alignment with the causeway. This suggests that the causeways led to an older settlement. The plazas are aligned along the axis of the major structure at each site.
- The causeways do not head towards the centre of the main termini structures.
- The major structure faces in the opposite direction of the causeway and the plaza. It faces older settlement.
- Two smaller, but unequally sized, structures are located to the sides or corners of the termini plaza. Xquerol lacks a western structure, but it may have been destroyed by later road or a house construction.

The differences in degree are:

- The major structures at each terminus are of different sorts; a pyramid at Xquerol, a transverse range structure at San Juan and a quadrilateral range structure at San Andres.
- Another difference is the pyramid bordering the present area of origin of the Xquerol causeway.
  in Ichmul. No similar structure has been encountered along the other two causeways.
- The major termini structures all have different alignments compared to each other and to the major structures in central Ichmul. This might indicate that the larger termini structures originally belonged to separate social formations.

5.1.2. The aligned assemblage

Ichmul's other causeway pattern, or polyagentive assemblage, can be seen in San Cristobal and San Pedro. The aligned assemblage consists of a small causeway joining, and also facing, a small pyramid at a right angle (figure 97).

The aligned causeways are shorter and narrower than the triadic causeways. They do not join up with the same general area in central Ichmul. They each head towards two different pyramids in the Central Acropolis, but they probably never went the whole distance. San Cristobal heads toward the southwest pyramid (S2W1-3) and San Pedro heads toward the northeast pyramid (S1E1-1). The San Cristobal causeway would have passed slightly outside of the church area where the projections of the triadic causeways would have intersected. The angle of the San Pedro causeway indicates that it may have been a branch of the San Andres causeway. However, it is equally possible that it was overlaid by the larger triadic causeway. If so, then the San Pedro causeway could have originated in the Central Acropolis, at the pyramidal Structure S1E1-1, or it originated in the same area as the San Andres causeway (Flores and Normark 2005b:83).

At the termini areas, the aligned causeways align in a right angle with each pyramid. In the case of San Cristobal, it aligns with the terminus plaza at a right angle as well. Both pyramids have similar form, style and size. The pyramids face the causeways. Both sites have a smaller structure directly in front of the stairway of each pyramid. The pyramids are slightly isolated from the rest of the major architecture at each terminus site, and there is no plaza in between the terminus pyramid

and the other architecture. The pyramid, the terminus plaza at San Cristobal and the causeway seems to be part of the same construction project.

If the San Pedro causeway was a branch to the San Andres causeway, it is likely that at least this aligned causeway is a later addition to the polyagentive network that included the triadic causeways, but neither survey nor ceramic dating can be used to support this for the moment. However, the San Pedro causeway could also be earlier. As the aligned causeways do not align with the church area, and unless they had different functions, sponsors or organizers with different actual ideologies, they are most likely not from the same time as the triadic causeways. If the aligned causeways are earlier it may explain their non-alignment with a central point in Ichmul. Later additions would more likely align with the established pattern of the triadic causeways or they were projects directed by other interests (ibid:83-84). Each of the two aligned causeways could be of different dates, in which one of them was the prototype for the other.

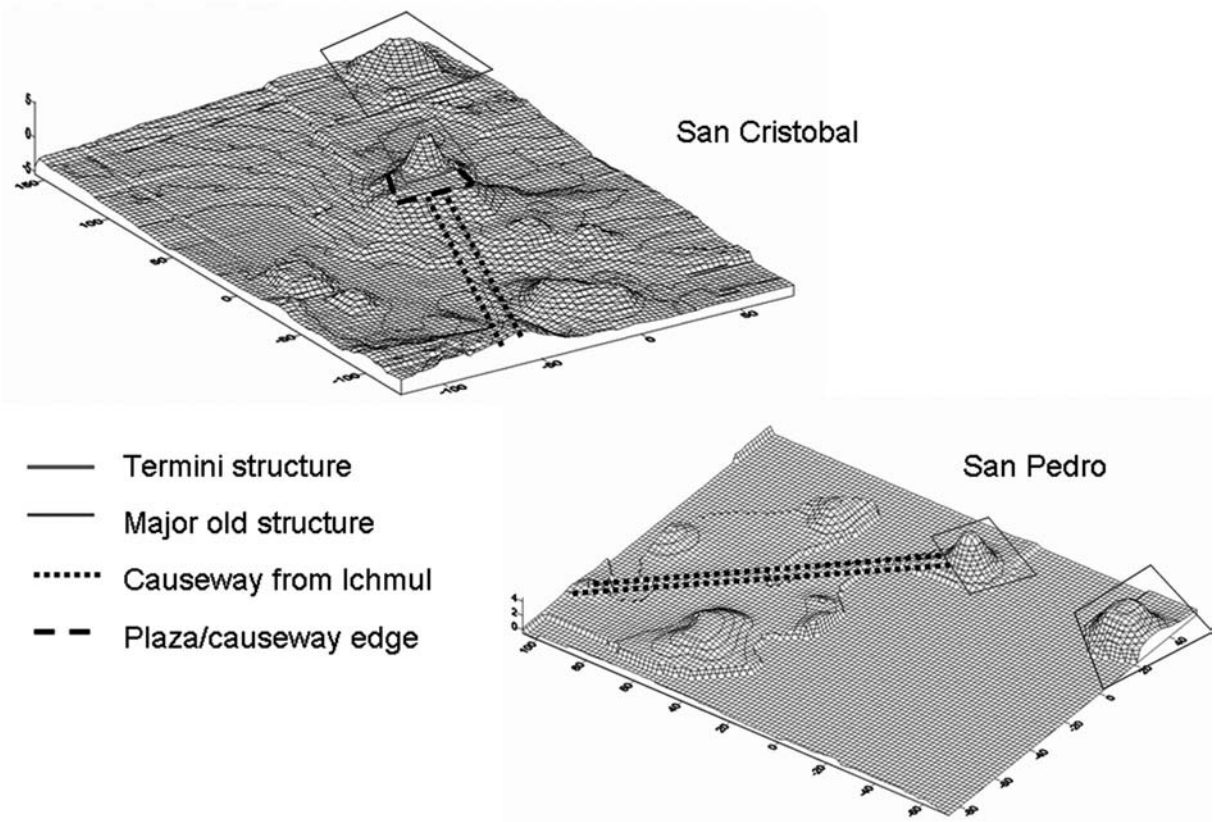


Figure 97. Comparison of the aligned causeways.

The specific similarities between the aligned causeways in question are:

- The projection of the aligned causeways do not share a place of origin in central Ichmul. However, if their projections are traced into central Ichmul they both head towards each of the two pyramids in the Central Acropolis.
- The causeways are single phase constructions (this is an assumption for the San Pedro causeway but due to its lesser volume it is likely to be a one phase construction).
- The causeways have similar width, height and length, which is about half of the triadic ones.
- The causeways and their termini structures appear to have been constructed in a joint effort.
- There is a right angle alignment between causeway and pyramid/terminus plaza.

- The causeways enter the centre of the plaza or pyramid.
- Both pyramids have similar size, form and style.
- The pyramids are facing the causeways.
- There is a small structure in front of each stairway of the pyramids.
- The termini plazas are somewhat separated from the rest of the settlement at the termini sites.

The differences in degree are:

- The main difference between the two causeways is that San Cristobal has a plaza with adjoining structures and San Pedro lacks a plaza.
- The pyramid at San Cristobal is situated on a hill and the pyramid at San Pedro is located on flat ground. The terrain is hillier towards San Cristobal, which gives it a greater architectural volume since the causeway levels out the topography.

5.1.3. The beads-on-a-string assemblage

This assemblage consists of a wide causeway that joins different groups, and the causeway is also in a near alignment with another causeway, forming an extended axis (figure 88). Sacbe 1 and Sacbe 2 appear to be located in a straight line, beginning in the northern part of Group A (heading 20 degrees east of north), ending in the southern section of Group B, then continuing in the northern part of Group B (heading 23 degrees east of north) and ending in the southern part of Group C. Sacbe 1 connects in a near right angle alignment with the architecture in Group A and B. It is not known if this was the case for Sacbe 2 in Group C (figure 98).

The elevated Group A would have been the perfect place to outline the axis since it provides a good view towards Structure N8W1-2 in the Northern Acropolis and Group C. From what is known, Group C covers a much smaller area than the other groups. In order to fit this group into the axis, and to maintain a near right angle alignment with the architecture, Sacbe 1 had to join the southern part of Group B at a less favourable place in relation to the Central Acropolis. This created the unusual L-shaped entrance. I believe that entering the plaza directly south of the ballcourt would have been more favourable, but in order to maintain a near right angle alignment with the architecture, Sacbe 1 would in this case have begun directly north of the Castillo and the axis would not have been straight between Group A and C.

The axis could have begun south of Sacbe 1, where we find Structure S5E1-1 (the pyramid surrounded by a quadrilateral structure which also has stairs on its northern side), and from there connected to Structure N5W1-3 in the Central Acropolis, passed over the smaller structures N6W1-4 and N7W1-1, crossed the pyramidal structures N7W1-9 and N8W1-2 in the Northern Acropolis, and to have ended in Group C. Thus, the beads-on-a-string causeway axis connects or crosses Yo'okop's three major groups. The groups act as termini sites to Sacbe 1 and 2.

Another pattern is that two stelae are presently located just outside the axis although they follow the alignment of the axis. The carved stairway raisers were originally located in the southern end of this axis, in Structure S5E1-1. Stela 1 and 3 are not in their original locations. Stela 2 was probably a ballcourt panel and is currently not in its original location. All this early Late Classic iconography, which is older than the causeways, is believed to have a water related connection (Wren and Nygard 2005). The axis has a slight north-eastern direction (20-23 degrees). In the cosmological models, the northeast direction is often assumed to relate to the Chaaks, the rain gods. Rain in the Northern Lowlands usually comes from the northeast. Ideally, this northeast direction should probably have been a greater degree than 20-23, more likely 45 degrees or more, to actually be in the northeast corner of a quadripartite world. Group A may have been a "Water Mountain" (Scarborough 1998). An Early Classic altar of unknown origin has been found on the Terminal Classic Sacbe 1. This relocation, in addition to the relocation of earlier stelae so that

they align with the Terminal Classic axis, may have had to do with a change in ritual activities. The Postclassic shrine on Sacbe 1 may also have been related to water.

However, the slight northeast direction is only present from Group A to Group B and from Group B to Group C. Going in the opposite direction; this association may not have existed. Seen from Group B, Sacbe 2 has a northeast direction, but not Sacbe 1. Still, the less favourable entrances to Group B, the L-shaped entrance of Sacbe 1 and the entrance in front of the Northern Acropolis of Sacbe 2, suggest that the axis began in Group A or in Group C but it does not mean that these groups were the dominant parts. Group A and C may only have been the extreme nodes of a ritual circuit that passed through Group B in which the ballcourt may have been important.

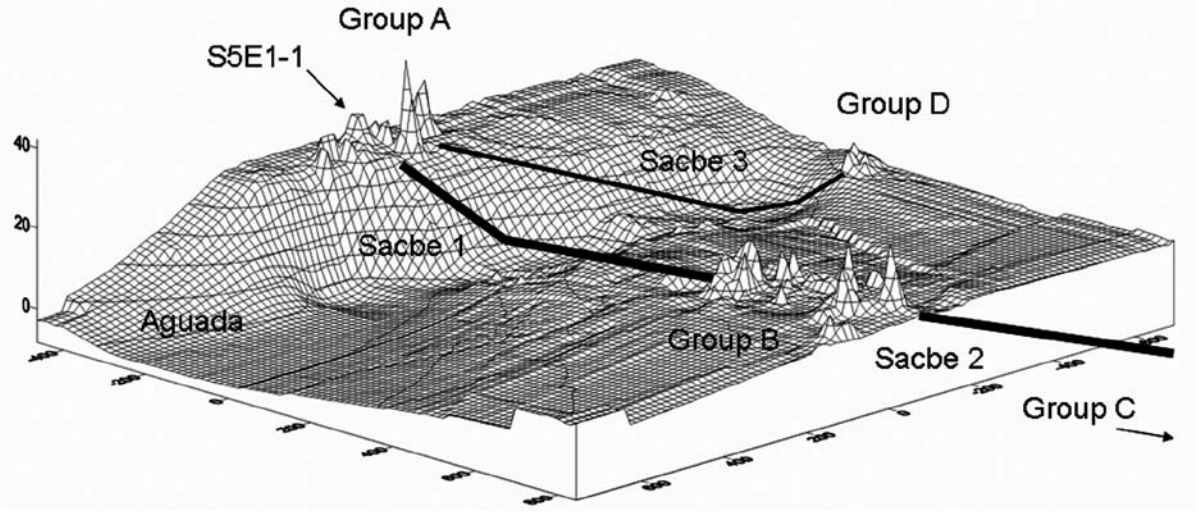


Figure 98. Comparison of the beads-on-a-string causeways and the non-aligned causeway.

The specific similarities between the beads-on-a-string causeways in question are:

- Although the beads-on-a-string causeways do not have the same origin in Yo'okop, they are aligned in an almost straight line for over three kilometers with Group B in the centre. This could indicate that Group B was the dominant "bead" when the causeways were laid out. However, there are very few traces of Terminal Classic activity in this area. Any of the structures along this axis could be the point of origin, or there was just an axis with no centre.
- The causeways are single phase constructions (this is an assumption for Sacbe 2 which has never been test pit excavated). In the case of the subterranean vault of Sacbe 2, I believe that the causeway runs over an older structure.
- The causeways have similar width and height.
- The causeways and their termini structures appear not to have been constructed in a joint effort (this is unknown for Group C and Sacbe 2 since only a sketch map exists). If Sacbe 2 enters Group C in a right angle, as is shown on the sketch map, this would imply that either the plaza/acropolis/pyramid was constructed at the same time as the causeway. However, if Group C is older and follows the same alignment as the rest of the site (apart from Group D), this axis might be old, only to be "paved" late in the history of the site. This would then imply a greater homogeneity in site-layout than at Ichmul where the termini structures and the structures in the centre have different alignments.
- Each extreme ends of the axis (Group C and Structure S5E1-1) have pyramidal structures with stairways that appear to be facing the causeways.

5.1.4. The non-aligned assemblage

This assemblage consists of a causeway joining separated groups, but there is no right angle between causeway and plaza. Sacbe 3 is half as wide as the beads-on-a-string causeways (figure 98). This could partly be explained by its course down a slope in which the eastern causeway edge needed to be much taller than the western edge. A wider causeway would have needed a much greater volume in proportion to a causeway that ran straight down the hill, like Sacbe 1.

The causeway is not aligned with the structures and plazas in Group A and it does not appear to enter Group D at a right angle with the differently aligned structures in Group D. I do not believe it should be included in the beads-on-a-string assemblage because the of the latter main emphasis seems to be to form a straight axis between Groups A, B and C. The non-aligned assemblage appears to have been constructed for other reasons but seems to be from the same time.

Sacbe 3 ends near the large Structure S4W2-1 which has substantial traces of Postclassic architecture. If it is an entirely Postclassic structure, there was just an open area where Sacbe 3 ended during the Terminal Classic. However, if the core of the structure is older and existed when the causeway was laid out, it could have blocked the further course of the causeway. In any case, unlike the triadic causeways, the aligned causeways and the beads-on-a-string causeways, Sacbe 3 does not appear to connect specific buildings.

5.1.5. The unfinished assemblage

There is not much to say about Sacbe 4. It is also non-aligned, as Sacbe 3, and may have been the eastern end of a causeway that would have gone to some unknown structure west of Group B. However, its eastern part ends in the side of a small pyramid. Maybe this is not a causeway but an unfinished platform.

The curved southern edge of Sacbe 4 is also unexpected for a causeway of this short length. If this was intended to become a causeway, it would have been very different from the other causeways at Yo'okop since it lies within a group and did not connect groups.

5.2. Virtual ideology and the polyagentive assemblages

It is time to familiarize ourselves with the virtual and the actual again. The lesson Bergson and Deleuze taught us is that the world should not be defined from specific characteristics but rather by the *tendency to emphasize the characteristics*. This pertains to the virtual ideology. The virtual ideology is something unspoken whose tendencies are connected to materiality. It affects the way in which humans form actualizations from the tendencies inherent in the polyagent. It proceeds unaffected by the workings of actual ideologies and it is based in the virtual. However, the mind can choose any tendency in matter and contrast it with another tendency in another polyagent. In the intersection between these tendencies, a node for an actual ideology is formed, partly based upon people's habits. The actual macro-ideology needs many such nodes to be connected by the need of the human agent's mind to merge actualized data into a coherent working system that is stable. However, rhizomes and nomadic thought make this arbolic structure.

The virtual ideology associated with the causeway is the tendency among past constructors to emphasize the straightness, height, width and length of the causeways. Thus, the virtual ideology is directly related to matter. There is also another tendency to align structures at a near right angle, either plazas with causeways or plazas with pyramids, range structures and platforms. These tendencies are not stable entities. When the tendency of causeway straightness meets other tendencies inherent in the other polyagents within the polyagentive assemblage (plazas, pyramids, range structures, etc.), this virtual tendency is maintained and right angle alignments are suppressed.

The importance of straightness is no clearer than along Sacbe 2 which probably crosses an older structure along its course. Not even a vaulted structure would affect the straight causeway layout. In the triadic causeways, Sacbe 3 and 4, the causeway would have turned to meet the terminus plaza in a right angle if a right angle alignment was of primary concern. This never occurs.

The actualized pattern that emerges within an assemblage becomes the basis for local nodes of actual ideologies. These actual ideologies were differentiated and past human agents would have filled them with information dependent on their earlier habits, experience and collectively derived quasi-objects (which are out of our reach). The straightness would still be a main factor long after the polyagentive assemblages ceased to function as an entity. The location of the Postclassic shrine on Sacbe 1 may have been chosen because of the straightness of the causeway, but the shrine was related to other actualizations and actual ideologies than the Terminal Classic arbolic beads-on-a-string assemblage is assumed to reflect. It may have been the result of nomadic thought that re-routed the larger Postclassic temples at the site. Therefore, it may have had another meaning than the arbolic Postclassic ideology that located buildings on top of the earlier pyramids.

Thus, the straightness would also fit later people's consciousness just as well without any "cultural" transmission needed, other than the physical "straightness" of the causeway. Therefore, the transmission of actual ideologies (both arbolic and nomadic) partly goes through the virtual tendencies inherent in the actualized material patterns rather than through a macro-cosmological ether.

The triadic causeways are twice as wide and long as the aligned causeways, and the beads-on-a-string causeways are twice as wide as the non-aligned causeway. Thus, width seems to be important in separating the assemblages. The width is roughly the same for the triadic and the beads-on-a-string causeways, as is the width among the aligned and the non-aligned causeways. Despite the distance, this difference at Ichmul and Yo'okop could relate to an actual macro-ideology of greater spatial extent that shared portions of a nested polyagentive network. I shall return to this later.

5.2.1. Comparing the triadic and the aligned assemblages

There have only been limited excavations within central Ichmul. However, the result so far indicates that the major portion of the Central Acropolis dates to the Early Classic, and that the Terminal Classic expansion of the site relates to the causeways, their termini, and raising the Great Plaza and the platform upon which the east churches now stand in central Ichmul. The area of intersection of the triadic causeways may not have become important until the Terminal Classic, although there are indications of a Late Formative origin of the Great Plaza below the church platform.

There are great differences in terms of volume of construction material invested in the various polyagentive assemblages at Ichmul. The total volume of the triadic causeways, excluding the extensive plazas and their constructions, is at least 65,350 m^3, and for the aligned causeways the combined total is at least 4,610 m^3. The difference between these assemblages is 14 times, which is not merely a result of differing lengths as Shaw's typology would show.

The triadic causeways represent a greater labour investment than the aligned causeways. What about the architecture at each triadic terminus site, excluding the termini plazas which contain as much volume as the aligned causeways? The larger structures at San Andres and San Juan appear to be dated to the Terminal Classic. However, at Xquerol, we have the presence of a Late Formative plaza (Normark 2003b). Although the nearby pyramid at Xquerol never was excavated, most of its volume could be from the Late Formative (judging from the nearby Late Formative plaza), with only minor Terminal Classic additions on its surface. The same scenario may be possible for San Juan and also San Andres. The two small termini pyramids at San Cristobal and San Pedro seem to be purely Terminal Classic, at least based upon excavated materials and architectural relationships. However, in terms of the volume of Terminal Classic additions at the triadic termini sites, they may not necessarily be much grander than at the aligned termini.

Still, the grander investment of the actual triadic causeways themselves and their uniform layout suggest that they possibly were the result of an arbolic macro-ideology. These causeways may have been constructed to dominate the population by an arbolic ideology. The shorter causeways could perhaps have been a nomadic ideology that hitherto had turned into an arbolic structure. These assemblages may therefore have had another ideology than the triadic causeways since the two aligned pyramids had a similar layout. In the arbolic and triadic assemblage, it appears as if the arbolic structure tried to overrun and deterritorialize the older actual ideology and buildings at the three termini sites by striating space. In order to reterritorialize these termini and include them in the arbolic ideology of the centre, these termini were given large plazas with two additional buildings. To use an observation derived from Foucault's description of the panopticon, these new structures were part of a "diagrammatic" strategy to "individualize the population" to make them follow an arbolic structure (Rajchman 1999). Whereas the triadic causeways possibly were built to integrate settlement, this may not have been the case for the aligned causeways.

The two causeway assemblages at Ichmul may be the result of two different sequences, like "old Chichen" and "late Chichen" (Cobos 2003). The smaller causeways could be the older ones that connected two locations in a smaller area. The triadic examples may be the result of a rapid, brief and later expansion (Flores and Normark 2005b:84). They may also be contemporary and reflect different actual ideologies. However, although they reflect another actual ideology it is the same virtual ideology that emphasizes tendencies towards straightness and alignment. Here the rhizomes and arbolic structures have been affected in both directions.

What actual ideologies do these different polyagentive assemblages possibly reflect? When it comes to the consistency of the triadic assemblages and the apparent joint effort in their construction, it is likely that this occurred during a brief period. One plausible arbolic macro-ideology that could be used to explain this large scale project is a modified version of Rice's (2004) recent socio-political model of the may cycle. At least some elements of her macro-cosmology could have taken part in some arbolic ideologies at Ichmul. Ichmul could have become the seat for at least one k'atun. This would imply that Ichmul had developed institutions found at other locations that became nested in larger entities (the may k'u) but which need not always exist at every large site (DeLanda 2000b). As Giddens (1984:28-34) argues, a structure, such as the may-cycle, consists of repeated rules, habits and resources that have been organized in institutions. At least Ichmul could have formed an institution similar to that of other may cycle participating sites, but it would not have included all aspects of Rice's ideal macro-model. This institution, maybe located in the area of the three pyramids in central Ichmul, might have organized and directed the work of constructing the causeways. Participating in the k'atun cycling may have proved to be positive for the site. Ichmul would not likely have been a may k'u, or a seat for all 13 k'atuns. Ichmul could potentially have been a k'atun seat within Chichen Itza's realm as a may k'u centre, but the Chichen Slatewares found in the area are later and have primarily been found at Nohcacab, four kilometers from central Ichmul.

The expansion of the settlement during the Terminal Classic could have taken place during such a k'atun and, if so, it might have been an inward expansion of the causeways rather than an institutional outward expansion. People at the termini sites may have wanted to be joined with the centre for various benefits. This could maybe explain the appearance of homogeneity in layout that each of the two polyagentive assemblages show at Ichmul. They may have been constructed during different k'atuns or if they were constructed during the same k'atun, the aligned causeways may not have had anything to do with the may cycle. It is also questionable that the aligned causeways had anything to do with k'atun cycles since they do not seem to connect to a central location, such as a cave or cenote (unless these are covered by the pyramids). Still, the homogeneity in the triadic assemblage indicates an arbolic ideology that emerged in the centre.

Rice suggests that termination rituals took place at the end of a may k'u cycle. However, it is

not likely that the disappearance of the causeways near Ichmul would be the result of termination rituals after a may cycle. Colonial period settlement is a more likely explanation. We should not rule out the option that the causeways actually began where we find them today. The quadripartite causeways at Ek Balam begin beyond the core of the site (Bey, et al. 1997). However, the presence of later architecture at these locations in Ichmul, probably constructed by material from the causeways, makes it less probable that they began where they begin today. Neither is it likely that the collapsed saskabera below the San Andres causeway was an intentional destruction during a termination ritual. Thus, the only evidence for Ichmul being part of a nested "may k'u network" is the homogeneity and rapid expansion of the triadic causeways and their origin in a central point that might be a karstic feature. The triadic pattern of the termini areas can be explained by other tendencies.

The alignments of the triadic causeways may have originated from a funnel shaped cenote, but their true physical origins, if they proceeded further into Ichmul than is currently known, would in all cases have been fairly close to one of three different pyramidal structures. If these were part of the triadic pattern is less clear. In the Central Acropolis, the north-eastern pyramid could be seen as slightly detached from the rest of the acropolis. If this was so, the Xquerol causeway was associated with the main portion of the acropolis and the southwest pyramid; the San Andres causeway would have been associated with the northeast pyramid. It is the only causeway whose origins may have been fairly close to the ideal intersection. The San Juan causeway would have been associated with the pyramid in the Eastern Acropolis. This could potentially relate to a tripartite organization at the site with three focal pyramids, three causeways, three termini plazas and three times three termini structures. If this also relates to an actual arbolic ideology with traces of k'atun ceremonies is another matter, not possible to know from the available data.

However, the causeways appear to have been integrative features and connected with agricultural areas, at least at San Andres and San Cristobal. As far as is known from the neighbourhood of Ichmul, there is no large plaza like the Central Plaza in Ichmul anywhere at the nearby sites of Calotmul, Xlapak or Sacalaca. In this case, it is likely that Ichmul was a market place. Judging from the assemblages at hand, the triadic plazas could also have been market places, as would San Cristobal.

5.2.2. Comparing the beads-on-a-string and the non-aligned assemblages

Even here there is a great difference in volume. The beads-on-a-string assemblage has a volume of 21,130 m^3 and the non-aligned causeway has a volume of 3,380 m^3. This is a difference of six times. Here it should be noted that Sacbe 3 would have had a much smaller volume had it not run diagonally down a hill.

The beads-on-a-string causeways are almost aligned with the other structures at the site (only 2 to 5 degrees off). The causeways were only later additions to an already established pattern and this makes them highly arbolic structures. There does not seem to have been a settlement in Group D before the late Late Classic. Therefore, the earlier settlement pattern at Yo'okop may have been very old, at least from the Late Formative. The beads-on-a-string pattern was formed by several actual ideologies through the history of the site. The non-aligned assemblage was the result of a far more brief actual arbolic ideology that originally may have been nomadic since Group D is located at a distance from the older and central groups. The structures at Group D do not follow the alignments of the older site. Once the inhabitants of Group D established an arbolic ideology, they joined with Group A, but they apparently emphasized another part of the group than the beads-on-a-string arbolic structure did.

Thus, since both assemblages connect to Group A, but do not head towards the same structures, they may relate to different actual ideologies. However, if they are contemporaneous they could be differences in degree of the same actual macro-ideology, possibly related to older

structures in Group A and the location near the aguada. Sacbe 3 does not head towards Structure S5E1-1, which potentially was the southern node of the beads-on-a-string axis. If the large Structure S4W2-1 is older than its current Postclassic surface indicates it would have stopped the course of Sacbe 3 in Group A. If Structure S4W2-1 did not exist when Sacbe 3 was constructed and is entirely a Postclassic structure, the causeway would have aimed towards Structure S5W1-1, which lies west of Structure S5E1-1. However, it is likely that Sacbe 3 ended where it ends today and that there was just a non-alignment between the causeway and the large plaza area. Thus, there is no obvious connection between the non-aligned causeway and the aguada and this makes it less likely to be part of the same actual ideology as the beads-on-a-string assemblage.

The beads-on-a-string causeways seem to connect specific important buildings, central for the arbolic structure, whereas the non-aligned causeway connects two areas in general, and does not connect to any specific building. This could imply a less hierarchical ideological structure, one that recently had been nomadic. Some nomadic thought is less likely to remain or be nomadic when something institutionalized, like the causeway, is or has been formed. Group D would not have been able to connect to Group A if it had an ideology that was different from those who used the beads-on-a-string assemblage. Another option is that the non-aligned assemblage was of a later date and replaced the earlier assemblage and therefore could still remain nomadic.

5.2.3. Comparing the triadic and the beads-on-a-string assemblages

The beads-on-a-string causeways at Yo'okop have similar height and width as the triadic ones at Ichmul. The total length of the beads-on-a-string axis is as long as one of the triadic causeways. Judging from their alignment, Sacbe 1 and Sacbe 2 appear to have been part of the same construction project (however, we lack a date for Sacbe 2). The dimensions of the triadic and beads-on-a-string causeways are more or less similar, the constructions of the causeways appear to be late in the histories of the sites and there is a possible connection to water in both layouts (a possible cenote or two at Ichmul and the aguada at Yo'okop). Because of this, it may be possible that a similar actual macro-ideology lies behind the construction of these two assemblages at both Ichmul and Yo'okop. The different polyagentive networks and œuvres of the two sites created two very different layouts, which could have shared a node in similar actual ideologies surrounding water sources and the passing of time (the may cycle).

Rice (2004) argues that sites fought or competed for the right to seat a k'atun and it could potentially have been the case between these two neighbouring sites. If this was the case, the causeway assemblages were most likely constructed during different k'atuns. However, an overall concern beyond the may cycle could be the location of water, something that got increasingly scarce during the dry Terminal Classic. The slight northeast direction of the beads-on-a-string axis could potentially relate to the rain gods. The San Juan causeway has a better "northeast corner" alignment than the axis at Yo'okop and it also bypasses a haltun. In both cases, the causeway layout followed much older settlement patterns and the actualized polyagentive networks generated different courses at each sites, depending on pre-existing nodes. In any case, both assemblages show clear arbolic patterns that may relate to a similar macro-ideology, but which turned out very differently due to how strata were destratified and deterritorialized.

Maybe the width of the causeways, which is almost the same between the two sites, is an indication of their use. They may have needed to support a distinct number of people, maybe for similar processions associated with similar actual ideologies.

If the triadic causeways began where they begin today, they would not have begun in a plaza area. This is different from Yo'okop where there are plaza areas, possibly with the exception of the southern end of Sacbe 2 which has not been located. This could indicate that the causeways at Ichmul never were finished (all five causeways would then be contemporary); or that they were constructed from the termini and inwards; or that their end today marks a formal boundary of

the centre of Ichmul during the Terminal Classic; or that plazas at one end of the causeways were unwanted for some reason.

5.2.4. Comparing the aligned and the non-aligned assemblages

These two assemblages have almost nothing in common and could be the result of local actual ideologies with little spatial and temporal extent. Some nodes of actual ideologies may be the same, such as "ancestor veneration". The only thing they do share, despite the spatial distance, is the virtual ideology related to straightness and the materiality of the causeway. They could potentially have a greater connection if one could prove that each assemblage was connected to the dominating assemblage at each site (the triadic and the beads-on-a-string assemblages). One such possibility is the unknown relationship between the San Pedro and the San Andres causeways.

However, the termini of the aligned causeways appear to be more formalized and arbolic than the non-aligned assemblage. This indicates that there were differences. Since the aligned assemblages were fairly arbolic, they may have had a closer relation to the triadic assemblages than the non-aligned assemblages had with the beads-on-a-string assemblage. The non-aligned assemblage may also be later than the beads-on-a-string assemblage since it breaks with the older pattern of alignment at the site.

5.2.5. Implications for archaeology

The similarities and differences between all these assemblages show a great variety that cannot be reduced to models of social organization or cosmology. Some of the causeways show an arbolic pattern which had a relation to a hierarchical structure and a macro-ideology of some sort. The unfinished causeway and Sacbe 3 appears to be more nomadic than the other causeway assemblages. The attempt to see a whole site as a united imagined community can only rely on an arbolic structure where everything is part of a totality. Rhizomes made the series, groups and institutions unstable over time, never forming such a totality. It would not be possible to reduce these patterns to fixed entities and units known from ethnography or ethnohistory since these units are socially constructed. The causeways themselves affected this social organization. Therefore they may not be the effect of an organization. Using lineages or house societies to explain buildings surrounding causeways will not fit the actual data and oddities are seen as exceptions that support the rule. I have on the other hand suggested that we must focus on the data and analyze it from more open concepts, since things and concepts change over time. Only an outmoded concept of culture reifies and territorializes other outmoded concepts.

5.3. Actualized phases of a polyagentive phylum

In the last two chapters, the causeway assemblages were analyzed as they may have appeared in their various actualized states in the Terminal Classic. Here I intend to see how the virtual has affected the causeways as a polyagentive phylum in their various actualizations through time. The following description should not be seen in the linear sense in which it is presented. It works like a rhizome, there is no straight line, only a middle, only an in-between. Some parts of a causeway could be under construction, in use, abandoned and re-used at the same time. There is no genealogy in the virtual, but from a humanocentric perspective archaeologists tend to create a genealogy from the actualizations because these are discontinuous and clearcut. Archaeologists have therefore connected them through an artificial bond, the quasi-object. Throughout most of these phases, I use a serial perspective of human collectives. However, the very construction of the causeways implies an institution or a group. When the causeway was in use, other people than just those from the institution or the group responsible for constructing the causeway may have used it.

5.3.1. Raw material as preindexical polyagents

Whether roads or paths existed at the locations where the causeways are located today will probably never be known. The only traces of the origin of the causeways are the nearby limestone quarries and saskaberas. This material can be seen as *preindexical* polyagents, matter that still has not been territorialized, "indexed" by human action. This matter has a lot of virtuality since it has not been actualized into an indexical form.

Once a preindexical polyagent is actualized into an indexical form, its future actualizations will continue from the indexical form. A cut limestone boulder can never become part of bedrock again (unless we talk about geological processes over millions of years). It can only be modified into smaller blocks or other artefacts. Thus, once matter has become materiality, some of its earlier preindexical potentials disappear.

However, the potentials for an indexical polyagent may also increase with time. Each causeway had in its original phase only a relation to a limited amount of indexical polyagents. Through their actualized phases they would get a far more complex polyagentive network that became nested in other networks. The actualization from raw material to architecture is the most critical one for the phylum. The objects were beginning to change, or act as reference points for maintaining actual ideologies within social formations.

5.3.2. Construction and the formation of a polyagentive phylum

The construction stage is the primary example of when humans affect the form of an indexical polyagent. I argue, in line with Gell (1998:233), that causeways are the result of actualized "moments" of events, not only because the events are datable in spatialized time, but the causeways are also ancestral (prototypical) to and descended (indexical) from other causeways. They are sometimes affected by indexical polyagents in other polyagentive phyla with which they sometimes form polyagentive assemblages. Any object in the polyagentive œuvre is both preparation and recapitulation of other indexical polyagents that are "individuals" of various phyla. People use earlier constructions as prototypes when they make new ones and may copy or modify them. Without this repetition, production of indexical polyagents would not be possible. Humans would also have fewer actualizations from which they could generate their actual ideologies. The more complex actualizations are, the more difficult it may be for one actual ideology to replace another actual ideology. It needs to replace or take over far more actual nodes that are nested in other networks. Power seems to increase the more plentiful and complex the indexical polyagents get since these objects also create desire.

The alignment of the triadic causeways of Ichmul appears to converge in the area where the Catholic religious complex lies, and particularly in the Black Christ church. Although these causeways do not converge in the same exact point, the junction is in a relatively small area (15 x 15 meters). However, the causeways never actually originated in the church area. The Xquerol causeway must have originated south of the Central Acropolis, the San Andres causeway is believed to have begun south of Structure 5 and the San Juan causeway may have originated near the north-eastern corner of the Eastern Acropolis. Despite this, the church area seems to have been an ideal centre of the triadic causeways. It is also notable that the two acropoli areas are to be found to the south and east of the church area, indicating that the church area lies in the centre of Terminal Classic Ichmul.

Due to its position, if one building was located where the projection of the triadic causeways ideally originated/ended, it could have been a tall structure. Such a building could have been the reference point from where the alignments of the causeways were laid out. Currently, it is possible to view the white towers of the Black Christ church from the top of the taller structures at every terminus site. A building similar in height, or slightly lower, than these church towers could easily have been seen in the past.

This could explain the source for the construction material which was used to build the Franciscan monastery, the L-shaped church, and other civil constructions during the Colonial period. Thus, since the monastery and the L-shaped church are older than the current Black Christ church, it could have been constructed by material from a pyramidal mound located where the Black Christ church is today, and the Black Christ church could have been constructed with material from another nearby location (Flores and Normark 2005b:85).

However, since the evidence for this hypothesis is non-existent, it should be emphasized that the layout of causeways could have been laid out without a tall central structure. Builders could have used tall way stations, such as the pyramid in the Eastern Acropolis for the San Juan causeway, the northeastern pyramid in the Central Acropolis for the Xquerol causeway and none for the San Andres causeway since there is no tall structure between its present terminus and the intersection area (Structure 5 is roughly 2.5-3 meters high). The builders only needed to establish a straight line from the intersection area to the way station and then another straight line to the terminus. This is a more likely scenario, since the causeways do not exactly intersect in one particular spot. This could be the result of 'human error' since laying out the causeway from more than one point increases the error. No one would have noticed this on the ground, since the causeways were blocked off by large structures (ibid:85-86). The San Andres causeway, due to the lack of a really tall blocking structure, could be most in line with the intersection area. Thus, the virtual ideology associated with the causeways emphasized straight side walls and an exact alignment with a certain origin was not as important as long as the causeway was straight.

Another complicating issue is that the triadic causeways, at least at San Juan and at Xquerol, align with the far ends of the larger structures at each terminus site, not with the centre of the structures. This makes it less likely that the layout was designed from the termini and inwards. However, the causeways do not align well with the possible way stations either, they are slightly off the centre of the pyramidal way stations. This could potentially indicate that the way stations were lower when the causeways were constructed or that taller poles were set up on these locations. In any case, once a brecha had been established between the two points, construction could have taken place from both directions, since the causeways were constructed in sections.

It is also possible that what today composes the church area was, in the Terminal Classic, just a wide raised plaza/platform with smaller structures, surrounding some important feature, such as a tree, a cave or a cenote (ibid:86). It would have been a feature that did not completely perish since the church was constructed upon the same location a millennium later. It would have been a crucial node for generating a new actual ideology, such as that of the Black Blister Christ "cult".

The beads-on-a-string causeways of Yo'okop may have been laid out in a similar manner. Sacbe 1 and Sacbe 2 have slightly different alignments. This could indicate that the axis was laid out in two sections, by using the Northern Acropolis as a way station in which the angle was slightly changed, intentionally or unintentionally. It is possible that the Northern Acropolis is the origin or centre of the whole layout.

It is not likely that Ichmul mimicked the radial settlement layout of any other site, such as Coba or Chichen Itza. The actual ideology that emerged in relation to the virtual tendencies of causeway straightness, the terminus plaza/terminus structure alignment and water location, formed patterns that appear to be similar across spatialized time and space without there being any "cultural" or "cosmological" similarities or continuity. The patterns are differences in kind rather than differences of degree. It is far more likely that it was the already established settlements before the causeways were laid out that governed the layout of the causeways, as seen in the non-aligned intersections between the triadic causeways and the termini plazas.

The polyagentive network that exists between a prototype and the manufacturer affects the way the indexical polyagents turns out. For instance, knowledge of other indexical polyagents may have influenced the form, since an older causeway may not necessarily have been the prototype

of a new causeway. For example, one could say that since there were no known causeways at the two sites before the Terminal Classic, the inspiration must have come from somewhere else, from a place with causeways. This is of course true to some extent, but another polyagentive lineage (phylum) existed at each site before the Terminal Classic; the platforms. The causeways at Ichmul and Yo'okop may have developed out of local extended platforms rather than mimicking causeways at other sites. The same can be argued with the particular arrangements of pyramids and range structures at the termini. Thus, the "triadic" similarities may be a difference in kind to the "traditional" Late Formative "triadic" patterns, and may relate to local actual ideologies, that are far from Schele's or Taube's 3-Hearth-Stone. They may not relate to the same "macro-cosmology" with all the different ingredients. Although the triadic causeways may have had a relation to Rice's (2004) macro-model, it was only portions of it that was of relevance. The triadic pattern may therefore not relate to the three hearth stones. Since polyagency breaks with earlier conditions and crosses actualized boundaries, changes may occur across different tendencies and courses than that are held within humanocentric archaeology.

5.3.3. Human uses of Terminal Classic actualizations

It is often the human uses of causeways archaeologists seek to understand. As discussed before, we cannot for sure know if these uses were for rituals, economic integration, socio-political organization, etc. We can at least assume that people most likely walked upon the causeways. However, the idea of walking is more complicated than one might think. Thrift suggests that walking has formed a new experience of nature, which is not walking for travelling but rather walking for its own sake. Walking has become the means to be at one with 'nature'. It is even seen as being therapeutic, a means to gather stillness and contemplation (Thrift 2000:46). One could also use a phenomenological approach á la Tilley (1994) and discuss various subjective interpretations of walking among past subjects. However, an indexical polyagent only contains the different constellations of singularities that make up the polyagent. It does not say much about past social constructions or subjectivity. We can tell more about the construction of the causeway than its later uses that never made any mark, or individuation, on the polyagent. In short, walking is a usage that does not leave much marks upon the various individuations of the causeway.

What we are left with is the materiality, the physical communication route or barrier. In archaeological settings, we can only study accessibility from a direct physical perspective. We have to ignore past social conventions of accessibility since these can never be known. It is better to focus on series of people related to certain forms of materiality, rather than groups, since groups rely on shared goals, actual ideologies, etc. (Fahlander 2003). Architecture made access easier or harder for certain series. Walls created boundaries and doors were entries through these boundaries (Fairclough 1992; Foster 1989). Buildings were by their nature more restricted than the plazas or causeways. However, access to a certain place does not mean that all monuments or structures at this place were accessible (Sanchez 1997:26).

Different series of people probably used the causeways; stairs along some parts of the causeways imply that people from different areas could access them. However, the structures which they connected may have been restricted, particularly the main structures at the triadic termini which have their entrances in the opposite direction. Most of the structures along the beads-on-a-string axis were elevated, which also creates restrictions in a possible route from south to north or vice versa. However, once on the causeway, the users formed a series of people, connected with each other by their relation to the causeway. On the other hand, the entrance to or exit from a causeway, from or to a lower terrain beside the causeway, broke this series. This led to the entrance to or exits from another node in the polyagentive network, which may have had tendencies on the activities that followed, such as in a farming area or at a water source.

Causeways not only directed the movements of people but also affected actual ideologies

among their users. It is likely that causeways at politically important sites were the manifestation of power, the indexes of their ruler in Gell's sense, and a way for the ruler to exercise control. However, in a way, the causeway controlled the ruler, making him/her or his/her assistants unable to perform certain forms of activities outside the physical extent of the causeway.

Hackenberg's (1974) process of ecosystemic channelling means that the exploitation of resources needs roads, and that exploitation itself is directed by the roads since movement and knowledge is directed (Forrest 1997:208). Thus, it is sometimes assumed that causeways attracted more structures than areas without such structures (Garduño Argueta 1979). Unfortunately, it is not known if the smaller buildings at, for example, San Andres were there because of the causeway or if they were there before. However, Sacbe 1 at Yaxuna did not attract settlement as it seems to have done at Coba (Shaw 1998:81). If structures surrounding the causeways are later additions, Hackenberg may be right, but if there are no or few later structures, this could either imply that the causeways were only used for processions or that they were very late in the history of the site. The limited spatial extent of most causeways makes it unlikely for them to have been used for extracting resources in areas not covered by trails.

The subterranean passage under Sacbe 2 could have been used for channelling water (Lloyd 2002:25), but I believe that it is too large and the ground is too flat. It is not known whether the passage was part of an earlier building incorporated into the causeway and either kept open or sealed off, or whether the passage was part of the whole construction project. In any case, whether there was a passage or not when the causeway was in use during the Terminal Classic affected people's activities, assuming that the passage was for human traffic. Either people could pass under the road or they could not. If they could not and there was a social restriction for some people to cross the causeway, then they may have had to walk around the whole causeway and Group C to get to the other side, even if there were stairs across the causeway. Another option is that the subterranean passage was used for rituals.

5.3.4. Abandonment as an active process

Group B at Yo'okop has three sets of fortifications that indicate that the site was under attack or at least experienced the threat of being attacked during the Terminal Classic or later. San Juan may also have had a palisade. Whether or not the Terminal Classic settlement of Yo'okop and Ichmul ended in war is currently not known. The evidence for warfare has been greatly exaggerated in the Maya area (Normark 2007). In any case, most of the sites in the Cochuah region went through considerable changes during the late Terminal Classic and were later partly resettled during the Postclassic.

Abandonment or discard is the most common context where we find objects and architecture since it relates to the final human use of the materiality (if we neglect later formation processes and reuse). Apart from the construction phase, abandonment is usually the context in which we most easily can detect activity, but it is usually the one of least interest to archaeologists who seek to explain activities beyond the event horizon, beyond the actualized material patterns. The abandoned causeway contains all individuations it has received or produced after being in contact with other actualizations. Thus, the causeway is the index of past polyagents. However, this phase is a temporary discard from social interaction since some causeways may be reused and once again take part in a social- and a polyagentive network.

Some causeways in the Maya area may have been destroyed or masked by tree falls, water level changes and sedimentation. At Coba, the water levels of the lakes have risen and now cover some of the walkways (Folan, et al. 1983). Sea level fluctuations around Itzam Kanac, Isla Cerrito and Vista Alegre have raised the sea level above the causeways (Shaw in preparation-a).

How did the abandonment of the original uses of a causeway affect later human activities? Once the saskab or plaster surface eroded away and was destratified, the causeway consisted only

of rubble, which made it difficult to walk upon. The re-growth of the forest is rapid and unless a larger organization maintained the causeway, no one would have bothered to clear the whole width of the causeway. Thus, there would no longer be a feasible formal route to a milpa or other important features necessary for subsistence or to "ancestral" shrines which eventually would end some of the actual ideologies of the Terminal Classic. Once the arbolic ideology that maintained and used the causeways disappeared or lost its interest in the causeway, nomadic ideologies could begin to use them for other uses (such as quarrying for construction).

Causeways may not have been forgotten by the remaining population. They would become nodes in new actual ideologies or remain as nodes for earlier non-arbolic ideologies. As such, they may have been incorporated in myths or as the remains of "pre-sunrise" beings noted in ethnohistoric and ethnographic literature (Hamann 2002). They were still part of the same virtual ideology (the tendencies toward causeway "straightness" or "location near water"), but the actual ideologies concerning them changed over time.

5.3.5. Uses of actualizations after the Terminal Classic

Even though roads may have set boundaries when they were used they may still have continued to be used as boundary markers even after the roads were not used for walking. For example, Roman roads in Britain tended to become boundary markers between parishes later in history (Collingwood and Richmond 1969:166). The Coba-Yaxuna causeway is a nearby example of a similar pattern which acted as a boundary between Postclassic regions (Villa Rojas 1934). No such pattern can be directly detected at Ichmul or Yo'okop.

Reusing older causeways for later settlement is known at Late Classic Nakbe in Guatemala (Hansen 1998). People built structures upon an early Late Formative causeway and this may indicate that if the causeway was in use, the whole original width was not in use. However, most examples of reusing causeways during the Prehispanic time date to the Postclassic, such as at Yo'okop. A Postclassic shrine was built on Sacbe 1. These shrines are usually believed to have been related to water and fertility (Lorenzen 2003; Normark 2003c). They may have been part of the same virtual ideology as before, emphasizing the straightness of the causeway, a straightness that had been associated with water and a slight northeast direction and its actual location near the aguada. However, the actual ideology was different since the shrine broke the old actualized patterns by locating a structure on top of the road bed which may have been used differently than the Early Classic altar that had been relocated upon the causeway, probably during the Terminal Classic or later.

Figure 99. Traces of modern quarrying of the Xquerol causeway.

Causeways could also be used for quarrying construction material for later constructions such as houses, Caste War fortifications, Colonial and modern roads, and albarradas as seen at all causeways around Ichmul (figure 99). In such a way, the causeway lost its "territory" as a causeway and was reterritorialized as a quarry. There are also albarradas lying on top of Sacbe 1 and Sacbe 2 at Yo'okop (Lloyd 2002:21), and on the Xquerol and San Juan causeways (Flores and Normark 2004a). Along the Xquerol

causeway, near a sheep farm, there are indications of patching a small dirt road. The material used consists of pebble sized stones taken from the nearby causeway. The Xquerol causeway has become a quarry along the route that it shares with the dirt road. The San Juan causeway has at least an 80 meters wide gap where the modern road between Ichmul and Chikindzonot passes. It is likely that these missing parts are now found in the modern road bed. This is an indication of an arbolic ideology which uses heavy machines that work in a government road construction. Thus, the reusing of causeways as quarries can be seen as both arbolic and nomadic. Other miscellaneous uses of the causeways can be seen along the Xquerol causeway which acts as a foundation for a sheep farm. The causeway boulders form small cavities that become habitat for various animals, ranging from insects, snakes and small mammals.

Another important reuse is that the monumental architecture is full of limestone, which in a deteriorated and destratified state can be good for growing certain crops. The soil type called *kaccab*, develops on ruins. The stones in the soil contain humidity after precipitation and this is suitable for slow-growing maize (Isendahl 2002:68). Past households created large quantities of soil nutrients which make contemporary milpa agriculture suitable in areas of dense ruined architecture (ibid:183). However, the causeways would not contain these soil nutrients as they were not used for residence and they were likely to be kept clean. Unrelated to this pattern is the San Pedro causeway which has been tilled to facilitate contemporary agricultural activities and plants. Maize has also been grown on the San Cristobal causeway.

An unintended outcome of Sacbe 3 is that it accumulates soil along its western side, but also that the causeway blocks off subterranean water drainage as it percolates from the higher elevation in the west to the lower east. This results in a higher degree of moisture on the western side of the causeway. Modern milperos say that crops grow better on this side than on the drier eastern side (Johnstone, personal communication 2003). This was most likely not the intention of the builders (Normark 2004c:160). Here the virtual tendency of the height and matter of the causeway changes the actual agricultural patterns.

There are no known causeways to the west and northwest of Ichmul. There is no proof that the old road to Peto is built upon a causeway. In other cases, some Yucatecan causeways have been used by the Spaniards and these may be the foundations for many Colonial and modern roads, which may explain why so few regional causeways are known (Mathews and Lizama-Rogers 2005; Romanov 1973; Shaw 2001g). Wagner (2000:169) suggests that the main streets in Mérida and Izamal follow ancient causeways. Many causeways in the Northern Lowlands were mined to construct *tranvías* (narrow railways for transporting henequen). Further, Bustillos (1964:76-80) and Romanov (1973) argue that causeways were the foundation for railways and also used for mule train paths, such as the causeway near Puerto Morelos (Mathews and Lizama Rogers 2005).

As argued with the Postclassic shrines, the straightness would still be a main factor long after the polyagentive assemblages ceased to function as an entity for past actual ideologies. The decision to transform the San Andres causeway to a modern dirt road a few years ago (which never was realized) had to do with the straightness and materiality of the causeway. This decision was related to other actualizations and actual ideologies than during the Terminal Classic, such as the need to have a substantial and wide road bed to support heavier motorized vehicles to the San Andres rancho. Thus, the tendency towards straightness would fit later people's consciousness as well without any "cultural" transmission needed other than the physical "straightness" of the causeway. The choice of reusing the causeway for constructing a new road is another example of how its latent virtuality, including its tendencies for straightness and elevation, continues to affect contemporary actual ideologies.

5.4. Polyagentive networks and power in the Cochuah region

This chapter takes a look beyond the polyagentive assemblages and the phyla. It will focus more on the power relationships within a polyagentive network. The differences between the polyagentive œuvres within and between certain sites are the result of different actual ideologies (both arbolic and nomadic) within specific polyagentive networks. This also derives from different virtual tendencies and local actualized patterns. Polyagentive networks integrated social formations and therefore it was the virtual tendencies within the nodes of networks (polyagents and indexical polyagents) that also affected and changed people's habits throughout the Lowlands and not only the actual macro-ideology as it is common to be believed among many Mayanists today.

In the nested polyagentive network, which consists of various polyagents (architecture, artefacts, soil, caves, etc.), competing actual ideologies were formed in the junction between existing actual ideologies and virtual ideologies. The virtual tendencies spread through the network. We must see it as a *nested* network without using predefined spatial or social distinctions. I will take the petroglyph in Aktun Chakal Ja'as as an example (figure 4). Is it located on the wall of the rejollada because of; the rejollada, the wall itself, the water reservoir below the carving, the cave entrance next to it, the overhang overhead, its location below surface, its relation to other petroglyphs, the location in a damp and semi-dark place, the location in a cool place, the connection to the pyramid on the surface, its location east of Sacalaca, or its location south of Ichmul? How do we know which network we shall pick? They are all nested in each other. Maybe it was a carver with an arbolic ideology from Ichmul that carved it, or maybe it was a carver from Chakal Ja'as that made some "mocking mimicry" (Bhabha 2004), a passive resistance to an arbolic ideology at Ichmul or at Sacalaca. Therefore, a focus on a local area needs to be able to bring in nested networks.

In the encounter between tendencies of the indexical polyagents in a network and the actual ideologies, new actual ideologies are formulated that "wills their power" on the polyagents. Since this network consist of polyagents, the very indexes of polyagents influence the production and maintenance of an actual macro-ideology, such as the may cycle. The institutionalized nodes of the tendencies of the idealized "may cycle" network, that continue from the Late Formative to the Postclassic, were actualized very differently at specific sites. This difference occurs because the network is nested within different networks at every place, never following the same pattern.

Shaw argues that the rulers of Ichmul and Yo'okop utilized causeways to hold together their social formations at a time when great changes occurred (such as the droughts or the disappearance of southern alliances). This strategy is believed to have been borrowed from Coba and Chichen Itza (Shaw in preparation-a). However, as indicated earlier I see more locally derived tendencies inherent in the network(s). Some additions known from regional contexts, such as ideas of a may cycle may have played a role, but it may have been brief in the local context, rather than being a fundamental deep structure. Cosmology is not deep at all, it is only the actual surface of a virtual abyss.

I shall see each site as a polyagentive network which had some nodes extending to other sites/networks. These nodes need to be materialized for archaeologists to study and therefore they should not be quasi-objects. The nodes may have initiated new virtualities that affected portions of the network. Although the network is spatial in its actualized pattern, the assemblages, phyla and indexical polyagents that make up the network are highly temporal. The networks spread in space by the use of the human catalysts and affect different locations by triggering virtualities that deflect them in differentiating directions.

In the following account of Ichmul and Yo'okop, I am only discussing actualizations of the virtual, not of social totalities as is the most common Mayanist approach.

5.4.1. Ichmul – the arbolic network

In Kurjack and Andrews' (1976) model, causeways extend halfway to neighbouring large sites, such as between Izamal and Ichcantiho (Mérida). There are no indications of this at Ichmul. The nearest large known site of comparable size is Yo'okop, which is 27 kilometers away, far more than the 3 kilometers that the longest causeway of Ichmul covers (Flores and Normark 2005b:91). The settlement surrounding Ichmul makes it tempting to create a hierarchical order in which Terminal Classic Ichmul directly controlled the termini sites, which in their turn controlled agricultural settlement (for example Ichmul-San Andres-Nohcacab). The absence of causeways heading west and northwest from Ichmul could be explained by the presence of other centres in that area, such as Calotmul and Xlapak, whose polyagentive networks may have had influences on the layout of the causeways at Ichmul (Flores and Normark 2004b). However, these sites seem, from brief visits, to be smaller than Ichmul, and would most likely have been part of Ichmul's realm, as would Sacalaca to the south. Ichmul's polyagentive network was also nested in the networks of other sites which also extended near and far. If Kurjack is right, the reason why the larger triadic causeways extend to the south and east, might have been to establish greater control of these areas as certain key nodes in the polyagentive network, to strengthen some institutional power and control of the nested networks. The reason may have been a possible expansion of Yo'okop's network that possibly "willed its power" upon neighbouring networks during the Terminal Classic. Sacalaca, which contains its own acropolis and monumental architecture, may have been a site which these two polyagentive networks competed about. There could also be several other undiscovered sites between Ichmul and Yo'okop that would have been caught up in such a possible struggle which could have related to an actual macro-ideology with elements of Rice's may cycle.

Ideas related to the may cycle may have been associated with institutions that spread in the contact between larger nested networks, which could have bypassed smaller scale networks, such as at Nohcacab. Thus, some actual ideologies move along certain courses in a nested network and can therefore bypass certain groups or interests that form other actual ideologies. However, apart from the width and straightness of causeways and location near water, there is not much in common between the causeway assemblages at Ichmul and Yo'okop. These nested networks may never have had close connection, or only some elements or nodes of the networks were caught up and hauled into the sites by various interested parties.

The crescent-shaped double wall at San Juan that bounds small structures sitting in front of a large platform, most likely in a former open area, may be related to possible conflicts. These structures would not likely have been in front of a range structure under normal conditions. If one is to speculate, this feature might be compared to patterns seen at Dos Pilas in Guatemala where simpler houses were found in areas that had been used for defense and that used to be elite areas. However, these squatters were of a later date than the defensive works (Demarest 1997). If the wall at San Juan had this defensive function, the site could easily have been reached by military forces from central Ichmul. Possible enemies would have been Yo'okop or even Chichen Itza whose network spread rapidly and widely during the Terminal Classic (Flores and Normark 2005b:92).

Ichmul's local network

Leaving Ichmul's possible role in a regional perspective to the side, let us discuss the local nodes of power within the polyagentive network of Terminal Classic Ichmul. The termini plazas seem to be either contemporaneous or slightly older than the causeways, but how much older is not known. This could imply that construction activity was more important at the termini than in the centre. The causeways were most likely constructed in sections, as seen at two places along the San Andres causeway. Whether the constructions were centrally organized from Ichmul, or directed by local institutions, "elites" or corporate groups can only be speculated. One possible explanation is that, during the Terminal Classic, Ichmul had an organization different to that of divine rulers. If so,

any group could have joined with the centre for various benefits. This would have affected different series of people at various nodes of the network. It is important to note that a series could not have constructed the causeways, because if they did, they would no longer be a series as they had a common goal. However, the group could have been created just for this project and dissolved afterwards. Once the causeways had been laid out, they changed any older group constellations, whether they were lineages, house societies, wards, multepal, etc.

The Central Acropolis plaza-range structure layout may be mainly Early Classic in origin. As such it could have affected the later Terminal Classic layout of the final versions of the range structures and the plazas even if there had been changes in social organization. Maybe the Eastern Acropolis, with its large interior plaza, is a later construction that reflects a different organization. This is also an option for the Great Plaza and what appears to be a necropolis with no apparent hierarchy among the burials near the centre of the triadic causeway intersection. In addition, the different origins of the causeway can reflect a triadic organization of some sort all together. These are questions that cannot be answered from current data.

It could be proposed that some of the termini structures were tombs for some important local persons. Even if excavations in these structures found burials and their dietary preferences were analyzed, like Chase and Chase (2004) have done for Caracol, there are too many explanations for dietary differences. What could be said is that the possible termini burials were most likely not the burial chambers for different rulers of Ichmul, unless they had some kinship relations with these places. It has been argued that the causeways may indicate some sort of parental or kinship relationship (Carrasco 1993; Kurjack 1977), which need not have been a royal one. The main architecture at the triadic termini sites is older than the causeways and if they contain burials they would be burial chambers for other series of people. The only known burials in the Ichmul area are the ones found in Operation 3 of Ichmul. Even though they were found near what arguably was the central place in the area, these Terminal Classic burials show no wealth.

The centralization that the causeways at Ichmul seem to reflect, could be a response to several conditions during the Terminal Classic, such as climate change (Gill 2000), a need for market access (Dahlin, et al. 2005) or the desire to connect with an important ruler (Ringle 2004). However, I believe that the main reason was to connect to an important feature that became or had become crucial in a local actual ideology. Still, the connection may have existed in the Late Formative and Early Classic as well, only to be formally "paved" in the Terminal Classic. Perhaps Ichmul's Terminal Classic expansion also followed an older polyagentive network that had utilized more informal trails, similar to those used today (Flores and Normark 2005b:87).

The only terminus site from which we do have sealed lots is Xquerol (Normark 2003b), as well as at Nohcacab, which is close to San Andres. These lots show mainly two sequences of settlement; the Late Formative and the Terminal Classic. It is possible that Ichmul may have tried to enlarge its domain to Nohcacab and other agricultural areas through the termini sites. One reason for connecting the termini sites with Ichmul by causeways, such as San Andres, is that agricultural resources may have been needed in the centre. However, this would not have been for transporting agricultural produce, since trails would have worked just as well. It would more likely have been to establish or maintain land rights by connecting them to nodes in an actual arbolic ideology, such as elements of the may-cycle, at a time when drier conditions prevailed. Xquerol may have had another arbolic ideology before this. These other sites could also have been constructed or re-settled during the early Terminal Classic since the causeways are late additions to this settlement. Such a pattern of early settlement during the Middle and Late Formative, followed by depopulation during the Early Classic and/or Late Classic and then reoccupation during the Terminal Classic, is characteristic of many other sites within the CRAS study area (Flores and Normark 2005b:87-88; Shaw in preparation-b).

Thus, the polyagentive network of Ichmul, and its surrounding sites within the extent of the

later causeways, fluctuated in spatial extent through time. Many sites within ten kilometers from Ichmul were occupied by the Late Formative. It is currently not known if any of these sites had a far more powerful network than the others. During the Early Classic, Ichmul is the only site that shows considerable construction activity. Although we currently lack a Late Classic sequence this is mainly believed to be a sampling bias. It is not until the Terminal Classic that sites around Ichmul show indications of substantial construction activity again. This time it can be argued that it is Ichmul's polyagentive network that totally dominates.

The drier conditions during the Terminal Classic could be a major reason why people spread and settled at Late Formative settlements around Ichmul. People needed to spread the risks of local droughts. Garden agriculture may not have been enough to support the population at Ichmul during the drier times and the settlement spread out. The establishment of the causeways could potentially have been an attempt to keep the expanding network together through a widely shared actual macro-ideology.

There is a category of structures that seems to postdate the monumental architecture at certain northern sites. There are small post-monumental, or open-fronted, structures at Uxmal, Sayil (Carmean, et al. 2004:432, 435), and Ek Balam (Ringle, et al. 2004:491, 502). Nohcacab in the Cochuah region has two open-fronted structures (Normark 2006; Shaw and Johnstone in press). Bey and others (1997) argue that the post-monumental structures were a short-lived attempt to keep a centralized control on a local level. Carmean and others (2004) relate them to people related to Chichen Itza. It is argued that these structures would have been an attempt to take control over the remaining sites. It could also be evidence of a conquest by Chichen Itza. Shaw and Johnstone (in press) believe that these structures are associated with the breakdown of large, centralized power, thus part of the "collapse" process and a transition to the Postclassic, rather than necessarily having any political association.

For unknown reasons, Ichmul was largely abandoned at the end of the Terminal Classic. Nohcacab with its fertile depressions may have been a better place to live as indicated by the Postclassic shrines. However, there was probably a sizeable population near modern Ichmul since the Spaniards made Ichmul into a cabacera.

Climate and settlement

The "Maya collapse" is sometimes described as an ecological disaster founded in pan-regional drought and/or local deforestation (Gill 2000; Shaw 2003a). However, a recent compilation (Demarest, et al. 2004) indicates that it was a complex scenario, and not a single cause. The Terminal Classic is now considered to be an extended transition period rather than as a rapid decline (Demarest, et al. 2004). Still, it is important to show that Gill's (2000) drought hypothesis rests on a questionable chain of evidence. His idea of "great Maya droughts" is partly based upon modern meteorological and climatological research, such as 20th century rain charts from Mérida, where he has been able to correlate dry years with starvation. For the Colonial period, where there are no rain charts, he has had to rely on written sources that mention droughts and famines. For the Terminal Classic times he has relied upon evidence from various sediment cores, such as from Lake Chichancanab which is close to Ichmul (Hodell, et al. 1995). These cores propose a drying trend between A.D. 800 and 1000. One would perhaps expect a concentration of settlement towards areas of secure water sources during this time. However, the opposite seems to be the case in the Cochuah region. During the Terminal Classic, the settlement reaches its greatest spatial extent. People largely re-settled areas with no secure water sources that had not been densely populated since the Late Formative. However, there are several phases of intensive droughts in Gill's scenario and some of the later drought may have finally ended the settlement.

Gill and others who are fond of the climatological explanations do not sufficiently deal with the greatest change that took place between the Terminal Classic and the modern time. That is the

early Colonial congregación policy by the Spaniards. Only one of the starvation episodes in Gill's (2000) chronological table occurred before the congregation. The former dispersed settlements were forced to resettle in more densely populated towns of Spanish models. Thus, when the droughts hit the Colonial towns, it probably affected the inhabitants in a way far worse than during the Prehispanic times. There was no longer enough space for garden agriculture. Therefore, we cannot use contemporary climatological data to explain the Terminal Classic settlement change without dealing with the fact that 20th century Mexican pueblos looked very different than the Prehispanic settlement. The Prehispanic population apparently could deal with the problem which a Colonial period network was less able to solve.

Figure 100. The Black Christ of Ichmul

The Black Christ and the Caste War

The target for much of the Terminal Classic settlement expansion in the Cochuah region were areas with caves. Caves were places associated with water, rain, and in some cases, more fertile land, even though none of the cave sites had any substantial natural water sources. This is obvious at the sites of Chakal Ja'as, San Pedro Sacalaca, Xtojil and Yo'aktun in the Cochuah region. None of these places have Colonial settlement. Either the caves became nodes for maintaining an older actual ideology or the caves completely changed in importance during the Colonial period. The Franciscan monks took control of the cenotes in central Ichmul and made new wells. It is not unlikely that their actual/arbolic ideologies forbade or at least discouraged people to use the caves around Ichmul since these were associated with "pagan" beliefs/ actual ideologies. Secular priests later took advantage of the location and incorporated local beliefs with their own (Flores in preparation), but they still maintained the settlement in a congregated manner. Since the Black Christ church maybe stands upon a cenote, and this also was the place where the projection of the triadic causeways intersected, this indicates that the virtual ideology of this location was important enough to become the node for different actual ideologies, several centuries apart (figures 100 and 101). The possible cave may have retrieved its earlier disrupted rhizome. The arbolic structure that the macro-ideology of Catholicism represented may have caused the nomadic thought of other actual ideologies to circumnavigate the arbolic thought by maintaining a connection with the caves far beyond the reach of the monks. Another option comes from the clue that one Yucatec word for church is aktun (cave) (Forrest 1997:64). In such a case, the nomadic and rhizomatic thought penetrated the very centre of the arbolic macro-ideology of Catholicism and the latter was transformed.

The Black Christ is an interesting example of how particular individuals may have used an actual ideology and actively transformed it by connecting the ideology of other important nodes of

a network. The myth of the Black Christ says in short that sometime between 1603 and 1610, a person observed a tree that burned without being destroyed. The tree was brought to the church and a young pilgrim claiming to be a sculptor passed by. He was ordered to make an image of the Virgin of Conception, the patron of the Franciscan order. One day later, the image of the Christ emerged and the sculptor had disappeared. The image and its sanctuary became widely celebrated. Sometime later, before 1656, the church burned and the only thing that remained intact was the image of the Christ, but now it was blackened and filled with blisters. From then and onwards it was called the Christ of the blisters. It was eventually moved to the cathedral in Mérida and it became the patron of the city. Revolutionary troops attacked the cathedral in 1915 and burned the image. A replica of the image was made in 1919 and it is located in Mérida. Another replica is located in Ichmul (figure 100). There is an annual pilgrimage to Ichmul (Flores in preparation).

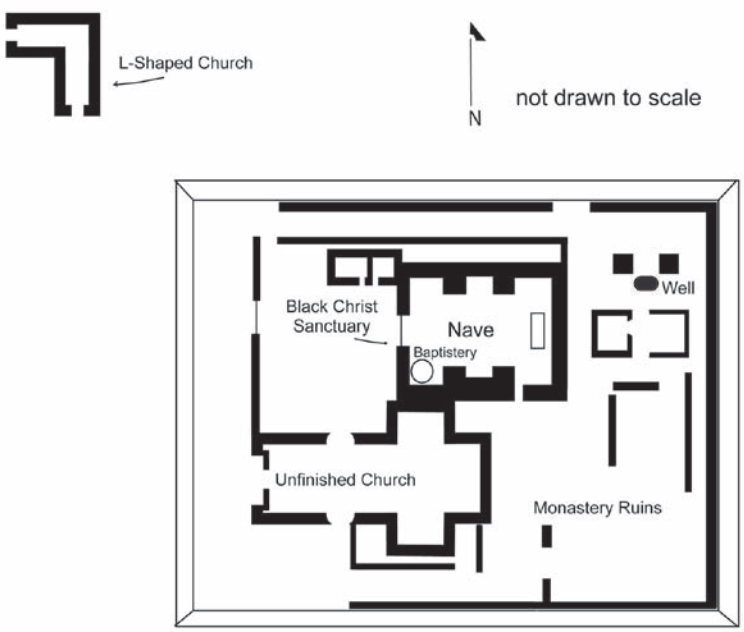


Figure 101. The church complex at Ichmul.

Flores believes that the reason why there is a joint location of the triadic causeway intersection and the Black Christ sanctuary was a religious strategy that tried to replace the Franciscan order at Ichmul. According to Flores, the population of Ichmul saw the Franciscan order as the legitimate priests and Flores believes that the locals did not recognize the secular priest Huerta as a minister of God. Huerta could have recognized the importance of the "intersection area" due to its continued use for rituals that were not sanctioned by the Franciscans. He replaced the Virgin of Conception with the Black Christ which contained associations to an actual ideology related to water and maybe to trade. This was not uncommon since local idols often were often replaced by Catholic tutelary saints. The image was probably black from the beginning, and probably brought from Guatemala where most images of saints were produced (Flores in preparation).

The story of the Black Christ could also be seen as a case of "mocking mimicry" where a presumably "Catholic" image of Christ, brought there by Huerta and/or by locals, recreated something similar to "Christian" beliefs, but which still had many other associations from a rhizomatic network. Fahlander (2007) writes that mimic behaviour is close to irony which means that mimicking is a fairly safe subversive strategy. What appear to be a pacified people by looking at their newly adopted activities, may therefore hide other agendas. Contrary to Flores' interpretation, one could possibly see the appearance of the Black Christ as a local resistance to the Franciscan monks by the use of another Christian symbol. A nomadic thought once again penetrated into the arbolic structure and changed it. However, it did not take long until this new actual ideology became the dominating one at Ichmul by taking over and suppressing the rhizomatic thought and thus transformed it into an arbolic ideology again.

When caves became important for arbolic ideologies after the contact period, such as with the Black Christ and during the Caste War, it was not the same actual ideology that once used the caves during the Terminal Classic. The early successful campaigns by the *mazehual* ("Maya") in

1847-1848 ultimately led to a series of setbacks and approximately 40 percent of the population of Yucatan died between 1846 and 1850 (Reed 2001:141). In 1850, the Caste War was almost lost for the mazehual. At this time, a spiritual mobilization and a revivalistic movement appeared. José María Barrera and his band came to a place called Lom Ha (Cleft Spring), which was a small cenote, 60 km southeast of Saban. He found a small cross carved in a mahogany tree at the edge of the cenote (ibid:148). One of the members of the band was Juan de la Cruz Puc, who was trained in priestly duties. He heard the voice of God coming from the cross in the tree. This cross became a *santo*, the Santo Jesucristo, an intermediary with God, which had the capacity to speak (ibid:150). Juan de la Cruz Puc could hear the voices in his head, but in order for others to hear the Speaking Cross he needed the ventriloquist Manuel Nauat to project the words as if they came from the tree (ibid:151). This Speaking Cross told its followers, the *Cruzob*, to continue the fighting. The town Chan Santa Cruz (contemporary Felipe Carillo Puerto) grew up on the location and became the centre for resistance until 1901. The religion still exists at some places between Saban and Felipe Carillo Puerto.

The Santa Cruz cave in the ejido of Sacalaca has several paintings that are believed to date to the Caste War. One painting contains the words Santa Cruz and depicts a church, maybe the Balam Na church at Chan Santa Cruz. Maybe the painting relates to the Speaking Cross. This could once again be seen as a nomadic thought that through the rhizome eventually created an effective "war machine" that for a short while drove most of the Mexicans out of the peninsula.

Throughout all these events, from the Late Formative until now, the virtual ideology has remained in the caves, in the landscape, in the causeways and in the architecture. The actual ideologies have come and gone and the rhizomatic thought has intervened between them all, since it is connected to heterogenous elements. It is this rhizome that survives even though sections of it ends.

5.4.2. Yo'okop – the dispersed network

Since we have a better known chronology and a better state of preservation at Yo'okop, the Terminal Classic patterns can be set in an extended spatialized time. Throughout its history, Yo'okop has similarities with polyagentive œuvres from the Puuc, Central Yucatan and Peten areas, which are associated with different ceramic networks (Fry 1987; Robles 1990).

Group A has traces of Late Formative activity. Operation 8, in the Northern Acropolis of Group B, revealed seven consecutive plaza floors from the Late Formative. Operation 2 in the Central Acropolis revealed two Late Formative masonry substructures. The layouts of these structures have the same orientation as most of the later structures at the site. This indicates an old layout, a virtual ideology that makes Yo'okop different from Ichmul.

Classic period networks

Some Early Classic ceramics were found in sealed contexts in the excavations in Group B (Operations 1, 2 and 8). Operation 8 did reveal two Early Classic floors, suggesting that the northern part of the group was occupied, but with less intensity.

Based upon architectural features, it seems that Group A had a substantial Early Classic occupation. There are several Izamal-style megalithic steps on the structures in Group A that were modified in later periods (Shaw 2002c:116). From the polyagentive perspective, Yo'okop's nested network fluctuated in spatial extent and one or several of its nodes extended into the "megalithic network" which also means that the "megalithic network" extended a node or several nodes to Yo'okop. It is often impossible to know in which direction the idea of the megalithic stairways at Yo'okop went. In this case, it is unimportant whether someone from Yo'okop went to the "megalithic area" and picked it up there or if someone from the "megalithic area" came to Yo'okop with the idea. The nodes of the "megalithic network" that were left in Yo'okop's Group A in the

form of megalithic stairways, have their own virtualities. When the materiality of the stairways met new actual ideologies at Yo'okop, both indexical polyagents and actual ideologies deflected in ways that would not have been possible at, for example, Izamal. We are not dealing with spheres here, since these often imply that everything within the sphere is connected. We are only dealing with nodes, extending in every direction, which form a network that catch and hauls in virtualities and actualizations, and transform them in the process.

The reference to Sky Witness, the 17th ruler of the Kaan kingdom, known to have been in power in A.D. 572 (Martin 1997:861), is by Wren and others (in press) believed to indicate the importance of Yo'okop during this time or later. Stone F has a glyph that is believed to be eight k'atuns (maybe 9.8.0.0.0) or A.D. 593. Stela 1, 2 and 3 in Group B are believed to have been carved within the next 60 years after the hieroglyphic stairway in Group A. The short period when the stelae and stones were carved at Yo'okop is contemporaneous with the ascendancy of the Kaan kingdom/network (Wren, et al. in press). This indicates that at least one institution relying on the calendar was present at Yo'okop before the Terminal Classic. This institution may have been modified over time. It seems that Stela 1 and 3, which originally were set elsewhere, were reset in their present locations during the Terminal Classic. Their present location is just outside the Terminal Classic beads-on-a-string axis between Groups A and C.

Considering the hieroglyphic and iconographic data, the polyagentive networks indicate some form of connection which is not just a matter of connecting polyagentive nodes and hauling in actual ideologies. There is a social/political connection of unknown nature. We may never know if Yo'okop was part of the domain or control of the Kaan kings. The mentioned woman may not have had a long lasting impact although she or the connection she represents appears to have been important for a brief period. There are some architectural patterns at Yo'okop that show similarities with the Southern Lowlands. One of the structures associated with the Kaan connection, Structure S5E1-1 in Group A, is similar to Tikal's South Acropolis (Carr and Hazard 1961). For the local approach that I am focusing on, this long-distance contact of uncertain nature is fairly unimportant, unless it brought along an older version of the "may-cycle" ideology that may not have previously existed at the site.

A 2.5 meters raising of the Central Acropolis in Group B, took place during the Late Classic. This transformed the Central Acropolis to an open space. Group D could have been established during the Late Classic which means that Sacbe 3 could not have been built earlier than this. The largest single building at Yo'okop, Structure S4W1-1 (the Castillo) was also built during the Late Classic, long after the north-south axis of settlement had been laid out (Wren, et al. in press). The Early Classic orientation of the greater polyagentive network towards the Southern Lowlands was maintained during the Late Classic.

The lack of the Bartres group of ceramics (Robles 1990) in the test pits at Yo'okop indicates that Coba's ceramic network did not affect Yo'okop during this time. However, there are architectural similarities, such as the rounded corners of Structure S4W1-1, which is similar to the pyramidal structure called Xaybe at Coba, and the ballcourt at Yo'okop is similar to the ones at Coba (Shaw, et al. 2000). Shaw and Johnstone see Yo'okop as a frontier site between competing spheres, which has created a mixture of styles. I rather see different networks intersecting and nesting at Yo'okop. These networks brought in virtualities within indexical polyagents and elements of actual ideologies from various nodes at other locations to form Yo'okop's own œuvre. Therefore, ceramics need not have followed the same courses as the ballcourt styles. There might be different activities behind the spreading of the networks that relate to different series or groups of people that might have consisted of "traders", "visitors" and "ballcourt architects" that picked up certain ideas at other locations, without bringing back a whole sphere, style or culture.

The aguada

Critical for the settlement at Yo'okop is the large aguada. It is believed that the aguada was enlarged to increase the water catchment area and provide construction material for the adjacent monumental Group A (Shaw, et al. 2000:9). During the Terminal Classic, the locus of construction activity changed at Yo'okop. The settlement from this time is located further away from the aguada. This is believed to be a response to the need to cultivate more aguada-area land which needed pot irrigation. Since the land around the aguada is the lowest at the site, crops came closer to the water table. Contemporary vegetation, such as trees and grass, is considerably taller around the aguada than at places further away (Shaw 2001a:105). The nearby Sacbe 1 was constructed at this time (Shaw and Johnstone 2001:11).

Shaw argues that if the aguada, as the only known large water source of the site, was the centre of the site and the reason why Group B and D connected to Group A with causeways, there might have been a hierarchical order at the site, particularly since Group D is closer to Group B (Shaw in preparation-a). However, I believe that Group B may have been the centre for the beads-on-a-string assemblage, extending to Group C and A. Group D may have become important at another time. The distance of a few hundred meters to the water source was probably not an obstacle since it would have taken less then 20 minutes to walk from Group D to the aguada on a cleared path (if there was no social or physical obstacle in crossing Sacbe 1). We do not know the reason why Group D was connected to Group A, but it does not necessarily mean that Group A dominated the site, particularly since there are few traces of Terminal Classic activity in Group A.

Although the aguada is large, it does not necessarily indicate a centralized control by people residing in Group A. For example, the highest ranking sna in Zinacantan need not live closest to the water source (Vogt 1969:175). A large water source makes it easier for people to collect water without others being able to control it. A smaller funnel-shaped cenote, like the one that might exist at the intersection of the triadic causeways in Ichmul, is easier to control. Later, the Spaniards took this to their advantage when they built their religious centre in Ichmul. Maybe the size of the aguada can explain the dispersed settlement of Yo'okop. The water source could not be controlled by one group or institution.

The Terminal Classic striation of space

Shaw argues that the southern-dominated alliances were no longer present during the Terminal Classic. If a faction at Yo'okop had been dependent on affiliations with the south, then the disappearance of the southern allies is believed to have affected the internal power relations at Yo'okop. The possible destruction or collapse of Late Classic structures in the Central Acropolis and the lack of any Terminal Classic structures there, combined with the desecration of Structure S3E1-5 (the sweatbath), could maybe reflect such political restructurings. Western Cehpech ceramic types and Florescent-style architecture dominate the Terminal Classic and Yo'okop may have changed their contacts to the northwest part of Yucatan instead (Shaw 2001c), or to put it in my terminology, the polyagentive network would have been intensified to the northwest.

It is possible that Yo'okop's more dispersed settlement reflects different "factions", groups or different social organizations as believed by Shaw. However, this would imply that they appeared in the Late Formative since we have traces of plastered floors at both Group A and B, dating to this period. It is not likely that this "factionalism" would have been maintained to the Terminal Classic, a thousand years later. They may have been different social formations in the Late Formative, but by the Terminal Classic, they most likely had a different identity and organization than in the Late Formative.

The settlement changes at Yo'okop could also be the result of an arrival of refugees from the south (Demarest 2004). However, the refugee explanation is based on the idea that refugees did not bring ceramics from where they came and therefore left no southern artefacts at Yo'okop

or that they slowly moved to the north and slowly changed their artefacts. If ceramic assemblages changes dramatically, this indicates that the producers adopt new design and production modes or that there are new ceramic specialists that replace the earlier ones (Shaw and Johnstone 2006). Considering the amount of people that would have come, the polyagentive œuvre would have changed considerably since once people settled, they would have made ceramics and it would follow known œuvres from the south. This did not occur, so if refugees came, which I doubt, the utilitarian ceramic production must have been controlled by some other groups than the refugees. At present, there is no evidence for this.

Group A may have been too costly to maintain, which led to the lack of construction and possible maintenance at this location during the Terminal Classic. The causeways leading to Group A were maybe used for rituals, to connect to an "ancestral" location above the rest of the site, which had an important water shrine. Sacbe 1 may have been used to connect to an otherwise abandoned location of the site. Maybe Sacbe 1 and 3 were very late constructions to Group A, which were planned to be part of a grander construction project at this location, but for unknown reasons this never happened. Still, I believe the most plausible explanation is that Sacbe 1 and Sacbe 2 formed an axis between the older water shrine in the south and Group C in the north, and that Sacbe 3 was not part of this arrangement, other than maybe linking Group D to the central plaza in Group A for rituals of some sort. Maybe the governing "elite" during the Terminal Classic lived in Group D. They may have connected with the axis area for community related rituals and ceremonies. The axis may have been ceremonial and Sacbe 3 may have had a more "mundane" use.

When the fortifications were constructed, probably during the late Terminal Classic, it was Group B that was fortified and not Group D. Whatever happened, the beads-on-a-string axis could no longer be used in the same way since fortifications still block the route from Sacbe 1 to the ballcourt area. It is also possible that at least some of the fortifications date to the Postclassic reoccupation of Group B. The placing of a Postclassic shrine on Sacbe 1 may therefore relate to another actual ideology since the whole Terminal Classic axis would have been sealed off (unless the southern fortification dates to the final Postclassic occupation).

Postclassic territorializations

There are many Postclassic summit shrines in East Coast style (figure 102), and a possible Postclassic accession structure (S4W2-1) in Group A. Operation 8 revealed a Postclassic plaza floor that had been covered by Postclassic occupational debris. This means that the site could maintain a sizeable population. The site may also have been an important pilgrimage destination (Shaw 2002c:119). Chen Mul incensario sherds have been found at Yo'okop. This ceramic type belongs to the Tases phase at Mayapan (Milbrath and Lope 2003:3-8). These were introduced at Mayapan around 1250 (Wren, et al. in press).

As indicated earlier, the ideas of diffusion and influence rely on an idea that changes come from the outside and in. However, the material populations of the nested polyagentive networks may be caught up and hauled in by other nested networks, rather than having an external source that forces itself upon the local area. Thus, the virtualities of the Late Classic Castillo in Group A

Figure 102. A Postclassic summit shrine at Yo'okop.

drew the Postclassic style superstructure to it rather than forcing the later structure upon the older. In this way, it deterritorialized the old pyramid and reterritorialized it with a new actual and arbolic ideology. Such networks can leave a node at a site, never connect with it again, and the node will deflect in diverse directions when it meets new actual ideologies and latent virtualities in other materiality.

5.4.3. Culture revisited – emergence and rhizomes

In chapter 3.1.1., I mentioned that I would attempt re-definitions of ideology, evolution and culture. The turn has now finally come to culture. The traditional concept of culture that I have criticized throughout this dissertation relies on an arbolic model. This culture concept describes a hierarchical system, centred around a core and an essence. It is reductivistic, linear, segmented and full of striations. It is also transcendent. There is a belief in an origin of this culture, a time and place from which everything is evolved and branches, but the branches are still part of the same transcendental ontogenetic entity. Thus, there is a clear inheritance and order in this cultural view where the culture passes through orthogenetic stages.

If I myself would settle for something that others call culture, it would rely on the rhizomatic network. The rhizome is formed from interlinked concepts. It is non-linear, horizontal, nomadic, deterritorialized and heterogeneous. The rhizome is a network that works from the bottom up, that creates an "emergent system of metabehavior that is strong, robust and intelligent" (Hertz 2005:2).

Deleuze and Guattari (1988:15) argue that thought in itself is not arbolic, but rhizomatic. Hertz (2005:3) discusses the possibilities for consciousness to exist without a central brain. In the fields of artificial intelligence, artificial life and robotics it is getting more obvious that conscious behaviour, or a behaviour appearing to be conscious, is not dependent on a central brain. This is similar to Bergson's argument that the brain only intensifies consciousness, but it does not generate it. For Bergson, consciousness is in proportion to mobility (Bergson 1998). Colonies of ants and termites create complex structures without a central brain. Consciousness seems to work on a rhizomatic model (Hertz 2005:3).

Hertz (2005:3) describes the concept of emergence/becoming as a step outside arbolic thought. Emergence creates new structures beyond existing structures. In this case, the emergent lacks a true genealogy and cannot be explained by the arbolic thought. However, there is no creator. Emergence is just a decentralized process, a line of flight. A multitude evolves as an entity without a united control. In this way, interconnected and simple systems, or rather nested networks, can display meta-consciousness (ibid:4). What is important with emergence is that it cannot be found by reducing the process to certain stages or hierarchies. Single and simple rhizomatic "stories" form a more complex meta-narrative.

The idea of culture seen in this rhizomatic view would be operating from a few simple interactions instead of a transcendent and arbolic mega-structure. In these simple interactions, human beings are but one of several nodes in a decentralized rhizomatic and polyagentive network of emergence. In order to understand an emergent phenomenon, it is best if it is un-abstracted, without representations. The rhizome works best in a real world, free from language and representation (ibid:9). Thus, culture emerges from a non-representational network of materialities and forms its own decentralized "meta-consciousness" that is upheld by humans and the polyagentive network. It emerges from within the network, not from transcendental categories. This "meta-consciousness" expands, becomes more complex and becomes nested in, and connected with, other networks. It is when the human mind creates representations of the network that we transform it to a transcendent macro-structure that some people call culture.

This kind of culture is not in dialectic opposition to nature. There is only a virtual continuum between matter ("nature") and materiality ("culture"). Such a culture would therefore be continuous

since it is set in a polyagentive network that works independent of the individual human beings. However, there never was or is any particular "Maya culture" that can be clearly demarcated in time and space since this rhizomatic culture concept would be based in a non-representational world, not based in language, which is one of the traditional cultural markers. The plane of immanence makes such clear demarcations impossible. Only brief actual ideologies set up such boundaries, and sometime striate space to manifest such illusionary boundaries.

The culture is therefore not something pan-regional across the Yucatan peninsula. It is related to matter and materiality and therefore it works best if it is approached from the local level. In this case, Ichmul and Yo'okop would be cultures without exact borders. Culture would coincide with the polyagentive network.

We are finally back at Bergson who argues that the principle motivation of evolution itself is consciousness (Borradori 2000a). Causeways and caves are not just phenomena in the human mind. They are real objects that are part of an extended rhizomatic network. Neither causeways nor caves are "conscious" in themselves, but they are nodes of a decentralized consciousness that is not located in one single creative agent (God, gene, human). The network has no beginning and no end. This consciousness, which we can call culture or a distributed virtual ideology, is an emergence that lies in-between. However, such a culture concept would be of little operational use just like the older culture concept(s). It is best to focus on specific materialities and create artificial boundaries such as a locale to set limits of the study.

6

Leaving the roads in-between

This thesis has had primarily two aims: (1) To characterize and abandon the *humanocentric* archaeology that relies upon *quasi-objects* and to develop the *polyagentive* archaeology that relies upon *actualizations* of the *virtual*. (2) To exemplify this last approach by studying how causeways (*sakbeob*) in the Maya area relate to temporality and materiality at and around the two large sites of Ichmul and Yo'okop in the Cochuah region of southeast Yucatan and west-central Quintana Roo in Mexico.

To reach the first aim of the dissertation, I have merged different theoretical standpoints into a new "synthesis". Of major importance here are the philosophical ideas developed by Bergson, Nietzsche, Deleuze and Guattari and their followers (Grosz, DeLanda and Pearson), recent developments within the field of technoscience (Latour and Pickering), Gell's indexicality, Sartre's serial concept, Turner's critique of quasi-objects and Aijmer's use of Wittgenstein in an "ontology of ontologies".

Deleuze and Guattari decentralize the importance of the human, and even the organic. They head toward a *posthuman* condition. Likewise, my aim has been the dissolvement of the human/non-human dichotomy by focusing on past causal relationships of actions, and set known materialities, as initial objects of study and action rather than an unknown human agent of the past. Thus, initially I went beyond the human condition, to see what lies within a creative evolution and involution. Only later did I reintroduce the human through the virtual and actual ideologies.

Humanocentrism and the archaeological event horizon

In archaeology, and in Maya archaeology in particular, there is a strong reliance on what is not present in the material remains archaeologists work with; the culture, the social or the human agent of the past. These are treated as primary objects of study, whereas our only visible material traces are set as secondary or passive. The human and/or culture are in the centre. Thus, all connections made between present materiality and past humans rely on assumptions projected backwards in time to fill what is assumed to be the void of the past. It is believed that a humanocentric or constructionist narrative is needed to explain the material patterns seen today. Materiality is therefore attributed with economies, politics, ethnic markers, practices, cosmologies, etc. However, this can only be done if we believe in static beings and ontologically secure categories.

For example, practices or acts are often seen as the causes of the artefacts which are seen as their effects. This means that we have to go backwards from the archaeological record, to cross the instant moment when a social act ended and the objects became part of the archaeological record (the *archaeological event horizon*), to find the connection to the past human agency or practice we are interested in. This imaginary instant separates the object from the preceding subject, and the temporal and spatial setting of actions. By using arguments from time philosophy, it has been suggested that transcendent quasi-objects are not suitable ways to begin our approach to the archaeological data. Instead, it is by using different analyzes of the *becomings* of what is *immanent* in materiality that we can reach an archaeology, that does not begin its research by filling the past with non-empirical quasi-objects that act as a static and essential background to which we introduce change.

Polyagentive archaeology

Therefore, polyagentive archaeology works from an ontology based in temporal movement rather than one with the basis in substance (classic materialism) or social constructions (idealism). The basis is to be found in Bergson's ideas of an unbreakable duration, a ***virtual multiplicity*** which we cannot understand since our intellect freezes the temporal flow and breaks down this unity into static fragments (***actual multiplicities***), from which we reconstruct time and the world through static representations. We create links between objects that are ***differences in kind***, but we assume them to be ***differences of degree***. A difference of degree relates to a homogenous media (space). However, in time, everything changes. Being is becoming.

Polyagency is my definition of what lies ***in-between*** the virtual and the actual. It does not have an identity of its own but it is crucial in creating identities and things. Thus, polyagency is another name for what generates becomings, differentiations and repetition. Polyagency generates ***individuations***, the emergence of forms that create boundaries in the virtual flow. These individuations are ***polyagents*** (actualizations of the virtual). Everything we experience which has a spatial location or extent is a polyagent. Thus, practice, culture and discourse are not polyagents, they are quasi-objects believed to have a spatial and temporal distribution. Quasi-objects are our way of trying to find patterns among actualizations; which I call an ***actual ideology***. These actual ideologies range from individual habits to arbolic macro-ideologies with the nomadic ideologies working in-between and cross-cutting these extremes. However, the unity comes from within the virtual and not from an external or transcendent social ether. As a contrast, the ***virtual ideology*** is directly connected to matter and the immanent.

Polyagency is not dependent on any particular temporal or spatial setting. It is a relationship and a process of individuation associated with materiality, but it is not found in any particular part of the materiality. If we see the materiality as the initiator of acts rather than the opposite way, we have a more diverging and open past future where the virtual took different actualized forms depending on our different approaches to the data. By viewing materiality as containing polyagency we have a bridge to the past human agency. In this case materialities are tendencies and the human agent can be likened to a ***catalyst*** which helps the objects to get from one actual state to another.

Materiality is seen as devoid of human agency and it is seen as the ***index*** and the ***prototype*** of other materialities. This reflects a relationship between polyagents in a nested rhizomatic network. Husserl's protention and retention concept, as it is used by Gell, has been used in this process and gives us an idea of how human agents reproduce, anticipate, repeat or copy what has been done by themselves or by others to form the material categories we locate distributed in "spatialized time" and space. This is how ***indexical polyagents*** (manufactured polyagents) have been formed.

The causeways of Ichmul and Yo'okop

As empirical examples, two major neighbouring sites in Mexico have been investigated through surveys, mapping, test pit excavations and ceramic dating. Yo'okop has four documented causeways and Ichmul has five causeways. The causeways of the two sites seem to have been contemporaneous, constructed during the Terminal Classic period (A.D. 800 – 1100). Particular focus has been set on five ***polyagentive assemblages***; the triadic causeways and the aligned causeways of Ichmul; and the beads-on-a-string causeways, the non-aligned causeway and the unfinished causeway of Yo'okop.

When it comes to Ichmul's triadic causeways and termini plazas one could easily fall back on a simplified cosmogram of a quadripartite cosmos and the three hearthstones of creation as others have done while discussing similar triadic patterns. I see the triadic pattern at Ichmul as different in kind to other patterns that appear to be similar (a difference of degree). A local approach is used in which the material nodes around Ichmul evolved very differently compared to the ones at the contemporary site of Yo'okop which is only 27 kilometers away.

The triadic causeways radiate out from an area which today is covered by a church dedicated to the Black Christ. These causeways end in large plazas associated with earlier buildings. At least two other buildings were built on the sides of the causeway-plaza intersection, forming a triadic pattern. They may be the result of an arbolic ideology related to the may-cycle rituals. The aligned causeways are smaller and mainly join small pyramids with central Ichmul, but there is no joint area of origin as in the case of the triadic causeways.

The beads-on-a-string causeways form an extended axis of two causeways that join three major architectural groups. At the southern end is a possible water shrine and east of this area is a large aguada. It is possible that this axis related to an arbolic ideology focusing on water rituals. The non-aligned causeway is smaller than the beads-on-a-string causeways and joins the southern architectural group with another later architectural group that breaks the alignments of monumental architecture at Yo'okop.

By viewing causeways as part of a *polyagentive œuvre*, we can relate the causeways to tendencies in ancient settlements seldom pointed out by researchers. The tendencies are not linear and we would be better off not to claim direct long term tendencies. A non-linear tendency also fits the scattered remains we have of the past. Therefore, the emphasis in this dissertation has not been on the long-term or the "grand history" but rather on the tendencies between architecture and human agent(s) from the perspective of a "virtual ontology". All these different activities initiated by the causeways, created a *polyagentive network* that still affects contemporary agents such as milperos, tourists and archaeologists, although the actual ideologies are very dissimilar in relation to the causeways.

The phases of the becomings of the causeways from the time before construction until present day have been of interest. The relationship between causeways, monumental architecture, domestic architecture, water sources, vegetation, and other features in the landscape have been analyzed. By linking a network of distributed indexical polyagents in spatial and temporal dimensions, it is possible to merge disparate polyagents where the past human being was like a catalyst that reproduced and differentiated materiality. The causeways form a *polyagentive phylum*, evolving within a creative evolution. The creative evolution is open-ended and lacks the mechanistic functions of actualized units of reproductions, such as genes or memes.

The phylum affects other phyla. Causeways may therefore even be prototypes for other polyagents, such as representations of roads in iconography or epigraphy or the use of metaphors in language, creating new social activities not present before. The causeways themselves had an important impact on the social formation once they had been constructed. They governed social activities themselves, largely without the intention of the human agents. The causeways could be seen as the part of the environment that was constructed, maintained, used, connected, inhibited, prohibited and abandoned by polyagents in a rhizomatic network.

Ideologies and the nested networks of the Cochuah region

The distinction between actual and virtual ideologies has primarily been an attempt to relate psychological processes to social processes. Bergson distinguishes between "instinct" and "intelligence". Intelligence focuses on static and spatial forms; and instinct focuses on temporal movement and matter. According to Bergson, spatial thinking creates differences of degree or dividable units of the Same. A macro-ideology, such as "Christianity" or "Maya cosmology", is just a difference in degree to the conceptualization of the world of one single human being. That is, a Christian person believes in more or less the same thing that the church as an institution teaches. There are obviously differences, ranging from a single person to the state and to the pope; from Catholics to Orthodox and to Protestants. These represent a multitude of "actual ideologies" that primarily relate to Bergson's concept of intelligence on the individual level. The "State" macro-ideology is arbolic, tree like, which means that it is sedentary, static, it repeats itself, it is uni-linear,

hierarchical, and it striates social and physical space. It creates structures of dominance. It wants to create an actual ideology that is the norm to which other people's individual habits are forced. In-between the extremes is the rhizomatic structure which is horizontal and connects different heterogeneous elements and it has multiple entries (it is not unilinear). This is also an actual ideology and relates to those persons not following the arbolic structure, they move around (socially as well as physically), they are nomadic. This rhizomatic structure is how the actual world actually is, despite the arbolic attempt to striate and organize it otherwise. In the intersection between the rhizomatic and the arbolic, there emerges several competing actual ideologies, ranging from individuals to groups and institutions.

Thus, although there is a multitude of ideologies, the arbolic and nomadic ideologies are attempts to describe two tendencies that affect the production of actual ideologies. Actual ideologies are fairly static and they quickly come out of phase with the reality of the world which my discussion of the virtual ideology focuses on. The virtual is related to matter/materiality itself. It is part of the duration. It relates to a much deeper part of our consciousness (Bergson's "instinct").

For example, the caves in the Cochuah region have been central nodes for virtual ideologies from 600 B.C. to today. The actual ideologies have come and gone but the caves remain. The virtual ideology is independent of the actual ideologies, they are differences in kind. In this sense, a cave that is associated with causeways, temples and churches, is the rhizomatic "node" for both a virtual ideology and various actual ideologies. The very materiality of the feature is important here. Despite Christian missions in the Maya area, the cave is still the focus in much of "Maya cosmology". However, what most Mayanists focusing on caves discuss are just the symbolic expressions, which are the expressions of an actual ideology. Similar materialities can convey different actual ideologies through time, although the virtual ideology remains unaltered. The problem is that many Mayanists study contemporary cave use to explain past cave use, without explaining that what they discuss only is a superficial or transcendent pattern, it is not immanent. For example, it seems that the caves of the Cochuah region were used for arbolic ideologies during the Prehispanic time. Settlement concentrated around, on, or near these features. During the Colonial time, the caves appear to have become places of nomadic ideologies, probably since the church tried to spread their arbolic ideology in which the caves were possible threats. However, the Black Christ is an indicator that a rhizomatic network continued to exist, which ultimately also affected the arbolic structure. On the other hand, most caves of the Cochuah region were not used during the Colonial times.

During the Caste War (1847-1901), the caves became central to the "Speaking Cross" religion of the "Cruzob". Thus, for roughly 300 years (ca. 1542-1850), the caves of the Cochuah regions seem seldom to have been visited, at least by people of the arbolic ideologies. We have basically no artefacts in the caves from this period. The actual ideologies have not been the same as today, but the virtual ideology has been the same.

A similar argument can be made for the Terminal Classic causeways. Once upon a time they were attempts by an arbolic ideology to integrate a dispersed population by striating space. This settlement dispersion was rhizomatic, probably not governed by the arbolic ideology. When the sites were abandoned and later re-settled (in Colonial times for Ichmul and in Postclassic times for Yo'okop), the causeways were deterritorialized and used as quarries or foundations for other structures. Parts of the causeways have been used in later arbolic attempts to striate space by creating boundaries and road constructions. This is an ongoing process. Materialities are processes only temporally locked up in actualizations.

7

A polyagentive glossary

Act

An act is a temporally and spatially defined sequence of action which relates to a human agent. The act is spatialized action, taken out of its own duration. It begins and ends at an instant. An act is only a mechanical movement and it is discontinuous from other acts.

Actant

In Actor-Network-Theory, this is any entity, human or non-human, that can initiate, affect and influence processes.

Action

Action takes place in true duration. It cannot be discussed separately from the body (human or non-human) and its connection to the world. Action does not consist of different intentions in a series or a combination of acts. Thus, it cannot be broken down into fragments. If it is broken down into spatial and temporal fragments, it is an act that lacks true duration.

Actual ideology

This is an ideology that is formed from actualizations of the virtual. Actualizations such as symbols, texts, architecture and artefacts are static and spatial representations, that act as nodes in the human cognition and conceptions of the world. Actual ideologies differ in degree and can range from individual habits to an arbolic macro-ideology.

Actualization

This is the process of becoming, when the virtual becomes actual. It is when the heterogeneous and undivided turns into the homogenous and dividable world. An actualization is also a closed and static entity that is the result of the actualization process.

Actual multiplicity

Homogenous, static, discrete and spatial multiplicities from which we can calculate, communicate and analyze.

Agency

The capability of any entity to affect processes, either intentionally or non-intentionally.

Arbolic

Tree like, sedentary, hierarchical, unilinear branching of thought and ideology.

Archaeology of false fullness

This is an archaeology that initially fills the voids in the archaeological record with human agency, practice, social structure, cosmology, etc. The artefacts are interpreted straightforward

with a practice, a practice that associates with human beings or social structure in a hierarchical order. It is believed that we need a holistic view and present quasi-objects are used to create a fullness from fragments.

Becoming

The idea that the world is always changing.

Being

The idea that there are essentials that always are present. For Bergson, Being is Becoming.

Body without organs

This is a critique of the organization of organs by the organism. The organism has a desire to preserve itself as a unity and evolves as a conservative system. It limits the creativity of its components since these exist for the organism. In a more universal sense, the body without organs relates to the energies and becomings of matter that are unstable, non-coded and unformed.

Catalyst

A catalyst can accelerate or decelerate a process but is not part of the process. It intervenes, finds targets, triggers tendencies and creates encounters that would never have occurred without them. It is not consumed or substantially changed and can therefore trigger tendencies at other places. In polyagentive archaeology, the human being and its action is initially reduced to being a catalyst that intervenes among materialities.

Difference in kind

A heterogeneous difference where differences cannot be reduced to degrees.

Difference of degree

This is when difference is just a degree on a homogenous scale of more or less.

Discursive order

One of Aijmer's three ontological orders. It relates to intentional pragmatic human action and conversations, an aspect of an actual ideology.

Duration

A continuous, heterogeneous and undividable time.

Élan vital

This is Bergson's vital impetus that explains the diversity of life, a "principle" of divergence and differentiation. It is a virtuality that is actualized and differentiated. The original virtual totality is differentiated but still has a unity and totality in every diverging line. Each dividing line carries the whole.

Endurance

This is when things persist in being in the present; from coming into existence to ceasing to exist. The whole thing is in the present and thus come to exist at different times.

Eternal return

The eternal return is Nietzsche's version of Bergson's duration. It is not a repetition of things,

acts and identities. Thus, it is not the identical that returns, it is the active that transforms itself. It is the becoming that returns.

Event horizon

In humanocentric archaeology, the event horizon is the imaginary instant that separates the artefact from the preceding action, agent, structure or culture.

Fibre

A microarchaeological metaphor for serial action.

Genealogy

Foucault's way of analyzing continuity of practices and subjects through changing discourses. It has no beginning or direction, only a plurality.

Habit

Learned responses to certain situations.

Humanocentric archaeology

An archaeology that emphasizes the human agent, social practices, macrostructures or culture behind the artefacts, rather than the artefacts themselves. It has a transcendent perspective of materiality in that it attributes materiality with quasi-objects which are not empirically seen. It assumes that materiality represents something human. Polyagentive archaeology, on the other hand, attempts to decentralize the human being and emphasizes the immanent in materiality.

Hylomorphism

The idea that matter is inert and "dead". Matter can only be changed from external causal powers. Thus, it relies on transcendence.

Iconic order

One of Aijmer's three ontological orders. It is a focus on iconic codes and their use through semiotics. The codes are not language based. In the polyagentive terminology, this is more or less what the concept of virtual ideology conveys, but the virtual ideology does not rely on representations.

Immanence

To exist and act in the world which is inseparable from the objects.

In-between

Events occur in-between the virtual and the actual. It is a space without space and a time without spatialized time. It makes entities emerge but is not an entity in itself.

Index

The actualized entity from which a human agent can make a conclusion about both the intention and/or capability of other human agents or polyagents.

Indexical polyagents

This is when a polyagent is an index or prototype of another polyagent. This usually relates to objects manufactured or used by humans. They are an index of humans and other polyagents

("material culture" in traditional archaeology).

Individuation

A process that takes place in-between the virtual and the actual. It takes place when the actual creates a boundary towards the virtual and generates an individual entity, an actualization.

Instant

An immeasurable and unreal unit of time. It can be discrete and/or momentary.

Intangibilities

Anything that can be perceived but which is not solid or palpable and cannot be modified by human action.

Locale

A modern defined geographic area of investigation. It does not relate to past emic views of space or place.

Macro-level

Everything that is not based on human agents or the single polyagents, but rather relies on "ontologically secure" and transcendent quasi-objects like social structure, politics, economy, etc.

Materiality

The social dimension of matter. It includes not only "material culture" (indexical polyagents) but everything that is perceived to be solid and palpable which has been modified by human action.

Matter

The substance that make up physical and tangible objects.

Metaphysics of presence

Derrida's term for our need to always base our theories in what is ever present (Being) rather than seeing that there always is a temporal difference. Nothing can be itself in itself.

Micro-level

The level of single polyagents, including human agents.

Monism

The idea that the world can be reduced to one principle. In this case, it is the idea of virtuality.

Multiplicity

A mathematical term relating to multitude. Multiplicities can be divided into homogenous/discrete actual multiplicities and heterogeneous/interpenetrating virtual multiplicities.

Nested networks

Polyagentive networks are intertwined with and within other networks in which we cannot say what is the hen or the egg.

Node

A physical location of matter or materiality within a polyagentive network. Relates both to virtual and actual multiplicities.

Nomadic

Something that moves around in rhizomatic networks and avoids the arbolic structures. It is non-hierarchical and deterritorialized.

Nomadic singularity

A singularity that traverses materiality, humans, plants and animals. It is not dependent on the matter of the particular individuations/actualizations.

Perdurance

When things persist by having temporal parts.

Plane of immanence

This is a graduated scale, a flat plane that explains the transversal movement of forces. The plane of immanence is the movement between different systems or networks which also crosses all systems and networks and therefore constrain them from being absolutely closed. It is also called body without organs and machinic phylum.

Polyagency

This is a process that takes place in-between the virtual and the actual. It involves individuation, stratification and the formation of time shelters.

Polyagent

Anything that has polyagency. It can be materiality or intangibilities. Humans are also polyagents.

Polyagentive archaeology

An archaeology that initially emphasizes the polyagents, or the materiality, rather than focusing on human agents and social structures believed to have related to the polyagents. These relations are of secondary concern.

Polyagentive assemblage

A constellation of heterogeneous polyagents whose spatial extent is decided by the researcher. A car can be seen as an assemblage of heterogeneous parts (doors, engine, wheels) but it can also be seen as a polyagent in an assemblage with the driver and the road. In this case it is of less concern what is nested inside each separate polyagent in the assemblage. The only criterion is that there is a physical connection between the various parts in the archaeological record, such as causeway, plaza and pyramid.

Polyagentive network

In contrast to the assemblage, for the network there is no need for a physical connection in the archaeological record. The network can extend its nodes over time and space. For the sake of simplicity, it is easiest if just one form of polyagent or polyagentive phylum is followed through the network.

Polyagentive oeuvre

The total production and uses of indexical polyagents in a defined temporal sequence of a social formation. An œuvre refers to all categories of indexical polyagents at any particular time that is believed to be part of a particular social formation.

Polyagentive phylum

A polyagentive phylogenetic lineage that consists of singularities that transverse and affect the production of various indexical polyagents. This materiality is continuously changing. The phylum is a conveyor of singularities and traits of expression. This movement is followed and partially manipulated by the human.

Population

The opposite of typology. Here differences are important. Individual polyagents create a population of polyagents that make up the whole. In typology, the individual is a deviation of an imagined ideal type and differences are non-important.

Posthumanism

The idea that the world consists of non-human agencies apart from human agencies. The human being and even the organic are not the driving forces and the human being is not the centre of research.

Practice

A practice is a set of acts that have been externalised from the agent. Thus, like an act, practice is spatialized, but it has taken the act to a level of continuity and persistence beyond the single human agent and therefore it is a quasi-object.

Principle of least difference

This is when one stylistic form has a minimum of modification compared to neighbouring forms, enough to make a distinction between them, a difference of degree. This principle can not be found in a specific object, only in relation to other objects.

Protention

The capability to anticipate what will come. Used in Husserl's time-consciousness.

Prototype

A polyagent that is used as a model for an indexical polyagent.

Quasi-object

The idea that there are transcendent structures that people share from internalizing social interaction as if this object or structure had an existence beyond the individual habits.

Realization of predetermined possibility

To search for something in the past that will be ancestral to something later, as if the later form was a predetermined possibility at the earlier stage. This relates to a closed view of time and change, which characterizes humanocentric archaeology.

Realist order

The main ontological order which in polyagentive archaeology ultimately relies on virtuality and its actualizations. It relates to the biological or genetic realities of human action as well

as geological, meteorological, ecological and other realities of the world.

Reference points

Any actualized node, artefact or memory, that is used to reconstruct the past.

Retention

When a perception is kept as a primary memory by the subject.

Rhizome

A collection of heterogeneous components. It is "anti-genealogical" since it works in the middle and has no goal. The rhizome works through variation and expansion. It is like an infinite open system that consists of multiplicities that are connected to other multiplicities.

Serial action

The activities of a series of people in relation to polyagents.

Series

People of different social backgrounds forming a brief unified identity in relation to polyagents.

Singularity

A singularity is a kind of intensity where something specific is concentrated and differentiates. The thing itself is what is differentiated. A singularity always diverges in its actualization. Matter and materiality are not homogenous, but conveys and consist of singularities. The singularity directs intensive processes that differentiate materiality into entities that need not resemble other entities.

Social formation

A general and analytic concept used to describe known and unknown social groupings which lived in more or less daily contact in a loosely defined spatial and temporal setting. A social formation is therefore not a "society" nor a "culture". It is rather a cluster of multidimensional networks consisting of polyagents.

Spatialized time

When time is seen as a difference in degree to space.

Stratification

Matter is stratified when it is individuated. A stratum consists of coded milieus and substances.

Structuration

Giddens theory of how agents are shaped in relation to constraining structures which they also transform through their action.

Temporal parts

The consequence of the idea of temporal parity. In some realist thought, the reality of time requires everything to coexist (B-time). It means that any polyagent in our present has temporal parts coexisting in our "past" and our "future".

Tendency

There are no homogenous entities in the virtual, only tendencies that are differences in kind from other tendencies. These intertwine and affect the actualizations of the virtual.

Territory

The spatial extent of an individuation or a cluster of individuations.

Thread

Microarchaeological metaphor for a set of fibres/serial action.

Time shelters

When an individuation has emerged, it forms a semi-closed system that sooner or later will dissolve or break up. This spatialized time is called a time shelter since it shelters/protects the duration of the individuation from external durations.

Transcendence

That which is beyond what we can observe, a higher order.

Will to power

This is Nietzsche's term for the struggle to overcome ones capabilities. This will wishes to produce, and to make more. It is sub- or nonhuman and cannot be attributed to any entity, just like Bergson's élan vital. The will to power governs all matter. It is a non-physical impetus to expand power.

Virtual ideology

An ideology that relates to Bergson's concept of instinct that is directed toward matter and its immanent tendencies. It is continuous and non-expressive in contrast to the actual ideologies. It is similar to Aijmer's iconic codes, but does not rely on representations, but on matter itself.

Virtuality

The ontologies of Bergson and Deleuze are based in the idea of virtuality. In the virtual, there are no eternal laws, principles, forms or substances in the world. Everything emerges through becomings, evolutionary and involutionary processes.

Virtual multiplicity

Heterogeneous and interpenetrating multiplicities that Bergson relates to duration, and to which Deleuze also attributes to the intensive spatium, or non-geometric space.

8

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9

Appendix: ceramics from the excavations

The ceramics are presented by Operation number, Level and Lot. For example: OP. 2, 3/2, means Operation 2, Level 3, Lot 2.

	San Cristobal							San Juan					Xquerol						San Andres												
	OP. 1			OP. 2				OP. 1			OP. 2		OP. 1						OP. 1			OP. 2									
Type	1/1	1/2	2/1	1/1	2/1	2/3	2 pro.	1/1	2/1	3/1	1/1	2/1	1/1	2/1	2/2	3/1	4/1	4/2	5/1	1/1	2/1	2/2	1/1	1/2	2/1	2/2	2/3	3/1	3/2	3/3	4/1	4/2
Achiotes Unslipped																																
Chunhinta Black v. Ucu						4										3	3		2													1
Nacolal Incised																																
Dzocobel Red on Black																																
Joventud Red													2																			
Desvario Chamfered																1																
Guitarra Incised																																
Dzudzaquil Cream to Buff													1			10	2	1	3													
Tumben Incised													1																			
Petjal Red on Black and Cream																																
Majan Red on Cream																																
Tipikal Red on Striated																																
Unto Presllipped Striated Black																																
Chancenote Unslipped					1						1			1	1	1			2								2		2		1
Tancah Unslipped																	1					1										
Xanaba Red (LF)																												2		2		
Huachingo																	2															
Dzalpach Composite																																
Sierra Red	2			3	4	1	2		1				5		2	27	5	1	10	7	1						2	5		2	2	
Laguna Verde Incised	2																				1		1								2	
Ciego Composite																																
Lagartos Punctate																																
Alta Mira Fluted																																
Repasito Black on Red																																
Flor Cream																																
Mateo Red on Cream																																
Polvero Black																1																
Saban Unslipped					1																											
Yaxcaba Striated																																
Xanaba Red				1	1	1	1				4		4																	12	2	
Caucel Trickel on Red					1		1						2																	2		
Tituc Orange Polychrome v. Tituc							1			2																						
Huachinango Bichrome Incised																																
Balanza Black													1											1								
Lucha Incised													1																			
Aguila Orange																																
San Blas Red on Orange																																
Dos Arroyos Orange Polychrome				1										1													1			1		
Caldero Buff Polychrome																																
Cetetac Fiber Tempered																																
Elote Impressed																																
Yalchak Striated																																
Maxcanu Buff																1																
Hunabchen Red																																
Kanachen Black																																
Tituc Orange Polychrome v. Tituc											1	1																				
Tituc Orange Polychrome v. Bandas															1																	
Tituc Orange Polychrome v. Camichin																																
Dos Caras Striated													1																			
Sacalaca Striated						1							2																			
Encanto Striated v. Sacna													2																			
Arena Red					1	1					1	1											2									2
Batres Red																																
Lakin Impressed																																
Muna Slate (LC)																																
Sacalum Black on Slate (LC)																																
Saxche Orange Polychrome						1								2	2																	
Perlanche Orange Polychrome																																
Juléki Cream Polychrome																																

	OP. 1				**OP. 2**					**OP. 1**				**OP. 2**			**OP. 1**								**OP. 1**				**OP. 2**									
Type	1/1	1/2	2/1		1/1	2/1	2/3	2 pro.		1/1	2/1	3/1		1/1	2/1		1/1	2/1	2/2	3/1	4/1	4/2	5/1		1/1	2/1	2/2		1/1	1/2	2/1	2/2	2/3	3/1	3/2	3/3	4/1	4/2
Chantori Black on Orange																																							
Sayan Red on Cream																																							
Chum Unslipped																																							
Yokat Striated	1				17	4	7	1		4	3	6		19	6		117	13	4	4									9	4	3	2	3		14		38	30
Yokat v. Applique																																							
Oxkutzcab Applique																																							
Muna Slate	9	2			11	8	3	1		1				2	2		160	30	9	9	3				1				9	1	4		2		5		11	5
Sacalum Black on Slate					1												13	2	1																		1	
Tekit Incised																	22	1		2																	1	
Tekit Incised v. Dzib																																							
Akil Impressed					1																																	
Teabo Red					2	1					1			1			3								2								1					
Becal Incised	3	1																																			1	
Ticul Thin Slate					1									1																								
Tabi Gouged-Incised																																							
Dzitas Slate																	3																					
Balantun Black on Slate																	1																					
Chacmay Incised																																							
Piste Striated																																							
Tohil Group																																							
Navula Unslipped																																							
Yacman Striated																																							
Chen Mul Modeled																	33			1																		
Mama Red																	3																					
Unidentified	43	14	2		56	54	41	9		9	6			134	20		144	16	5	51	24	1	31		4	8	9		26	1	9	8	4	5	5	10	56	29
Total sherds	60	17	2		94	77	59	16		14	11	8		166	32		520	66	24	109	41	3	48		14	10	9		47	7	16	10	13	14	24	16	127	70

Ichmul

	OP. 1					OP. 2																	OP. 3																							
Type	1/1	2/1	3/1	4/1		1/1	1/2	2/1	2/2	2/2-3	2/3	3/1	4/1	5/1	5/2	5/3	5/4	5/5	6/1	6/2	7/2		1/1	1/2	1/3	2/1	3/1	3/2	3/4	5/1	6/1	6/2	6/3	6/7	7/1	7/3	7/4	7/5	7/6	7/7	7/8	7/10	7/11	8/1	9/1	9/2
Achiotes Unslipped																																														
Chunhinta Black v. Ucu			7	3									1					1								1						3														
Nacolal Incised																		1																												
Dzocobel Red on Black																																														
Joventud Red																																														
Desvario Chamfered																																														
Guitarra Incised																																														
Dzudzuquil Cream to Buff			4	2									2																																	
Tumben Incised																																														
Petjal Red on Black and Cream																																														
Majan Red on Cream																																1														
Tipikal Red on Striated																																														
Unto Preslipped Striated Black																																														
Chancenote Unslipped	1	4	1	1														5	4	4												1												4		
Tancah Unslipped																																														
Xanaba Red (LF)																																													1	
Dzalpach Composite																																														
Sierra Red	5	4	3	5				1									2	5	38	1	4					1			1	4	2		1	3		8							1		2	
Laguna Verde Incised	1	2															1		2		2																								1	
Ciego Composite																																														
Lagartos Punctate																																														
Alta Mira Fluted																																														
Repasto Black on Red																																														
Flor Cream																			2																											
Mateo Red on Cream																																														
Polvero Black				1																																										
Saban Unslipped																		13		5	1																									
Yaxcaba Striated													9		2	2	2	97	22	27	48															1										1
Xanaba Red	4	1	3	2		9	32	5	1		3	3	3	2	4	2	5	63	23	30	94					14	2		3	3		3	2	3	1	13	1	6	2		1	1	1			
Caucel Trickel on Red															1			27	6	2	10																1						1			
Tituc Orange Polychrome v. Tituc													3					1	2																											
Huachinango Bichrome Incised																																														
Balanza Black											1		1						5	3	1										1				1											
Lucha Incised																																														
Aguila Orange														3			1	8			2											1														
San Blas Red on Orange																				1	1											1														
Dos Arroyos Orange Polychrome			1								2	1	6			1	2	23	9	4	1									2			5			2										
Caldero Buff Polychrome																																														
Cetelac Fiber Tempered																																														
Elote Impressed																																														
Yalchak Striated																					5																									
Maxcanu Buff											1										3																									
Hunabchen Red																					1																									
Kanachen Black																																														
Tituc Orange Polychrome v. Tituc																														1																
Tituc Orange Polychrome v. Bandas																																														
Tituc Orange Polychrome v. Camichin																																														
Dos Caras Striated																																														
Sacalaca Striated		1									1																																			
Encanto Striated v. Sacna																																														
Arena Red		3									1																					1		1	1	1		2								
Batres Red																																														

Ichmul

	OP. 1					OP. 2																	OP. 3																							
Type	1/1	2/1	3/1	4/1		1/1	1/2	2/1	2/2	2/2-3	2/3	3/1	4/1	5/1	5/2	5/3	5/4	5/5	6/1	6/2	7/2		1/1	1/2	1/3	2/1	3/1	3/2	3/4	5/1	6/1	6/2	6/3	6/7	7/1	7/3	7/4	7/5	7/6	7/7	7/8	7/10	7/11	8/1	9/1	9/2
Lakin Impressed																																														
Muna Slate (LC)			1																																											
Sacalum Black on Slate (LC)																																														
Saxche Orange Polychrome	3	2	2	1								1																					1		1											
Petkanche Orange Polychrome																		1																												
Juleki Cream Polychrome																																														
Chantori Black on Orange																																														
Sayan Red on Cream																																											1		
Chum Unslipped																																														
Yokat Striated	1	4	1	2		3	4		32	29	94	32						4								2	1		1	2	2	3	9	7	12	15		6		1		6	3	4	7	1
Yokat v. Applique																															11		2			1										
Oxkutzcab Applique																																														
Muna Slate	4	9	2	4		4	4	3	16	9	37	35	1					3								4	2		1	2	4	4	8	8	7	12	3	8	4	3		4	8	1	5	1
Sacalum Black on Slate		3		3							2	3																1					2		4	2		3	1			2	1		1	1
Tekit Incised																																1														
Tekit Incised v. Dzib																																														
Akil Impressed												1																																		
Teabo Red		1				3	3		3		2												4			7																	1		1	
Becal Incised																																														
Ticul Thin Slate			1																																											
Tabi Gouged-Incised																																														
Dzitas Slate																																														
Balantun Black on Slate																																														
Chacmay Incised																																														
Piste Striated																																														
Tohil Group																																														
Navula Unslipped											1																																			
Yacman Striated																																														
Chen Mul Modeled		5	3																																											
Mama Red																																														
Unidentified	10	27	23	14		11	47	11	10	38	26	15	21	3	2	4	10	35	86	36	20		43	5		24	2		10	7	2	11	18	9	5	24	1	13	1			3	13	2	15	2

Nohcacab Operation 1 and 2

	OP. 1						OP. 2																																
Type	1/1 pt1	1/2	1/3	2/1	3/1		a/1/1	b/1/1	c/1/1	d/1/1	e/1/1	f/1/1	h/1/1	h/1/2	h/2/1	h/2/2	i/1/1	i/2/1	j/1/1	j/2/1	j/2/2	k/1/1	k/2/1	k/2/3	k/3/3	k/5/3	k/6/3	k/7/3	k/8/3	l/1/1	l/1/2	l/2/3	m/1/1	m/2/1	m/2/2	m/2/3	n/1/1
Achiotes Unslipped					6																																	
Chunhinta Black v. Ucu	5	2	4	4	8			5				7				4		1		5	1		8					5	1			2	2	9		1	1
Nacolal Incised			1		1															1			1					4						1				
Dzocobel Red on Black	5																			1																		
Joventud Red	2				9																							1										
Desvario Chamfered												1				1																						
Guitarra Incised	1				2																																	
Dzudzuquil Cream to Buff				8	13			4							1	3				1							3	1									
Tumben Incised																				1								1			1		1				
Petjal Red on Black and Cream																							1															
Majan Red on Cream					2																												1					
Tipikal Red on Striated																																						
Tumben Incised	3				5																																	
Unto Preslipped Striated Black																															1							
Chancenote Unslipped	1		1	7	3			1		2		4				5		1		3			6				1	12					4				
Tancah Unslipped																																						
Xanaba Red (LF)																6							10							1								
Huachingo																																						
Dzalpach Composite																1																						
Sierra Red	40	6	29	9	14		10	24	5	1	6	38	3	6	1	29	3	8		39		10	73	3	2	26	18	33	5	3		6	34	83		8	6
Laguna Verde Incised	6			1	4						1	4				3		1			17		5			2		4				2	1	3		3	
Ciego Composite																																						
Lagartos Punctate																																						
Alta Mira Fluted												1																										
Repasto Black on Red																																						
Flor Cream												1																										
Mateo Red on Cream																																						
Polvero Black	2		1	1	2															4	1					1		5	1				1				1
Saban Unslipped																																						
Yaxcaba Striated												1								1													2				
Xanaba Red		1					1	2			1		1	1	2			1		6				2		1					2	1	11		3	
Caucel Trickel on Red																																						
Tituc Orange Polychrome v. Tituc																																						
Huachinango Bichrome Incised																															2							
Balanza Black	3																														1							
Lucha Incised	1																																					
Aguila Orange																																						
San Blas Red on Orange																																						
Dos Arroyos Orange Polychrome																			1	1			2	1							2							
Caldero Buff Polychrome																																						
Cetelac Fiber Tempered																																						
Elote Impressed																																						
Yalchak Striated																																						
Maxcanu Buff	1															1																						
Hunabchen Red												1								1																		
Kanachen Black																																						
Tituc Orange Polychrome v. Tituc																																						
Tituc Orange Polychrome v. Bandas																																		1				
Tituc Orange Polychrome v. Camichin																																						
Dos Caras Striated								1															2															
Sacalaca Striated																																		1				
Encanto Striated v. Sacna																																		1				
Arena Red	2								1											1																		
Batres Red																																						
Lakin Impressed																																						
Muna Slate (LC)	2																																	1				
Sacalum Black on Slate (LC)																																						
Saxche Orange Polychrome									1											1			1															
Petkanche Orange Polychrome																																						

Nohcacab Operation 1 and 2

	OP. 1						OP. 2																																
Type	1/1pt1	1/2	1/3	2/1	3/1		a/1/1	b/1/1	c/1/1	d/1/1	e/1/1	f/1/1	h/1/1	h/1/2	h/2/1	h/2/2	i/1/1	i/2/1	j/1/1	j/2/1	j/2/2	k/1/1	k/2/1	k/2/3	k/3/3	k/5/3	k/6/3	k/7/3	k/8/3	l/1/1	l/1/2	l/2/3	m/1/1	m/2/1	m/2/2	m/2/3	n/1/1
Juleki Cream Polychrome																																							
Chantori Black on Orange																																							
Sayan Red on Cream																																							
Chum Unslipped									9																														
Yokat Striated	31	2	2				11	67	23	11	29	69	6	7	3	6	5	11	25	35	21	18	164	27	7					29	3	21	30	38		17	3
Yokat v. Applique																																							
Oxkutzcab Applique																							1																
Muna Slate	54	5	14				22	42	18	11	12	62	8	4	5	13	5	2	20	46	17		97	13	2					14		33	44	38	3	36	1
Sacalum Black on Slate	2						2	11	6	1	1	8							1	5	2	11	5								1	3		1		2	
Tekit Incised	1											2								3			3										2	1				
Tekit Incised v. Dzib																																							
Akil Impressed																								1														
Teabo Red	12							7	6		2	10		1	1				10	6		5	4	2						5		5	1	6		8	
Becal Incised			1				1	1				1								1																1	
Ticul Thin Slate																							3													1	
Tabi Gouged-Incised							1	1			1								2																		
Dzitas Slate	9							12	12	3		24						2	2	2			8	2						1		1		9		2	
Balantun Black on Slate	13						1	7	11	1		14						1					11								2		2	1		1	
Chacmay Incised	2																																						
Piste Striated									2														2															
Tohil Group	1							3																1								1						
Navula Unslipped																																							
Yacman Striated																	1			1			6									1	1				
Chen Mul Modeled	25						1	5		1		7							4		1		9							2			8	4		11	1
Mama Red												1										1	4															
Unidentified	91	16		34	30		70	444	62	68	68	408	15	0	21	72	18	35	154	214	105	76	702	37	9	25	30	48	13	125	5	164	307	345	11	156	32
Total sherds	315	32	53	64	99		120	637	156	99	121	664	33	19	34	144	32	63	219	379	165	121	1128	89	20	55	52	114	20	180	11	247	433	564	14	250	45

Nohcacab Operation 3-6

	OP. 3											OP. 4							OP. 5							OP. 6																		
Type	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1		1/1	2/1	3/1	4/1	4/2	5/1		1/1	2/1	3/1	4/1	5/1	6/1		1/1	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10	1/11	1/12	2/1	2/11	3/11	4/11	5/11
Achiotes Unslipped										1																																	
Chunhinta Black v. Ucu	1	1			2		2	1	2								1												1													
Nacolal Incised		1						1																																		
Dzocobel Red on Black																																										
Joventud Red										1																																
Desvario Chamfered																																										
Guitarra Incised								1																																		
Dzudzuquil Cream to Buff						2			1	1														1																			
Tumben Incised									2	1																																	
Petjal Red on Black and Cream																																										
Majan Red on Cream																																										
Tipikal Red on Striated																												1														
Tumben Incised																																										
Unto Preslipped Striated Black																																										
Chancenote Unslipped	4	9	10	1						7			4	2	2		2							3					5	5			1			4				2	2
Tancah Unslipped																																										
Xanaba Red (LF)																																										
Huachingo																																										
Dzalpach Composite																																										
Sierra Red	14	17	15	19	16	13	13	8	53	36		1			1	2	8		4			3		26			1			1		2					2	1		2	
Laguna Verde Incised			2	3		4	2		10	5																				1											
Ciego Composite																																										
Lagartos Punctate																																										
Alta Mira Fluted																																										
Repasto Black on Red																																										
Flor Cream																								1																		
Mateo Red on Cream																																										
Polvero Black						1		2		1						1																										
Saban Unslipped																																										
Yaxcaba Striated																																										
Xanaba Red	10	7	11	1	4							1		1			1					1	2			6	7		2	1	4		3	2			3		2	1	10	
Caucel Trickel on Red		1															4					1				1								1						2	
Tituc Orange Polychrome v. Tituc																	2																								
Huachinango Bichrome Incised		1																																								
Balanza Black				1				1																																		
Lucha Incised																																										
Aguila Orange			2																											1											10
San Blas Red on Orange																																										
Dos Arroyos Orange Polychrome	5	3		1					1																	1	1			1				1	1		2	4	1		3	1
Caldero Buff Polychrome																																									2	9
Cetelac Fiber Tempered																																										
Elote Impressed																																										
Yalchak Striated																																										
Maxcanu Buff			2																																							
Hunabchen Red																																										
Kanachen Black																																										
Tituc Orange Polychrome v. Tituc	1	2	3																												1	1				2		1	1	1	2
Tituc Orange Polychrome v. Bandas																				1																						
Tituc Orange Polychrome v. Camichin																																										
Dos Caras Striated			2																				1																			
Sacalaca Striated			3																		8																					
Encanto Striated v. Sacna																																										

Nohcacab Operation 3-6

	OP. 3											OP. 4							OP. 5							OP. 6																	
Type	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1		1/1	2/1	3/1	4/1	4/2	5/1		1/1	2/1	3/1	4/1	5/1	6/1		1/1	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10	1/11	1/12	2/1	2/11	3/11	4/11	5/11
Arena Red	2	7	2		1								1											2						1	1	2										
Batres Red																																										
Lakin Impressed																																										
Muna Slate (LC)													1																		1					1				2	4
Sacalum Black on Slate (LC)																															1										
Saxche Orange Polychrome	5	8	5																		1		1				1				1	4			2		2		1	
Petkanche Orange Polychrome																																										
Juleki Cream Polychrome																																										
Chantori Black on Orange																																										
Sayan Red on Cream																																										
Chum Unslipped				3	2	2									1								1															3			
Yokat Striated	93	180	91	30	15	8	4		3			100	305	115	81	28	29		154	307	122	30	50	66		195	394	48	64	130	57	133	63	57	14	16	107	6	24	5	7	
Yokat v. Applique												1							7	6	5					1	5	4	3	3		3			2		3					
Oxkutzcab Applique																										2																
Muna Slate	65	93	41	6	7	5	2					80	154	52	19	4	8		92	128	86	12	15	25		115	167	41	57	66	5	63	36	21	4	13	71	1	14			1
Sacalum Black on Slate	1	5	24	4	1							3	17	2	2	2	1		2	6		1	4	4		3	25	1	3	7		3	1	2	1	1	5		1			
Tekit Incised	1	1	1										5	1					2	1	1			1									1								27
Tekit Incised v. Dzib																																										
Akil Impressed																			1								6		1		1										
Teabo Red	15	10			1							3	13	1			1		4	6	5	2	1			2	3	1	1	5	3	1	2	1	1		2		1			9
Becal Incised	2																																									1
Ticul Thin Slate												1		1			4		1	3	2	1					2		2		1	2									
Tabi Gouged-Incised	1																		2					1			1	1	1				1								
Dzitas Slate												4	1														9		1	6	11	3	1				7				
Balantun Black on Slate	3											1	1		1											1	11			5	7	6					4				
Chacmay Incised												2														1				1											
Piste Striated																													1		4		1			1					
Tohil Group																																										
Navula Unslipped																																										
Yacman Striated			1									2	1																													
Chen Mul Modeled	1	1	2									5																														
Mama Red												1																														
Unidentified	197	176	85	39	47	25	29	15	61	28		159	177	26	7	31	76		125	130	51	11	13	206		254	379	120	107	229	159	156	83	49	7	7	88	9	60	4	18	33
Total sherds	421	523	302	108	96	60	52	29	133	81		364	680	201	114	68	137		394	588	281	62	88	336		581	1013	216	244	463	259	378	195	136	31	37	302	22	110	11	50	99

Yo’okop Operation 1-6

	OP. 1							OP. 2												OP. 3					OP. 4							OP. 5			OP. 6						
Type	1/1	2/1	3/1	4/1	4/2	4/3		1/1	1/2	2/1	3/1	3/2	3/3	3/5	3/7	3/8	3/9	4/1	5/1		1/1	2/1	3/1	3/2		1/1	2/1	3/1	3/2	3/3	4/1		1/1	2/1		a/1/1	a/1/2	a/1/3	a/1/4	a/1/6	a/1/7	a/1/9
Achiotes Unslipped					5	8																																		
Chunhinta Black v. Ucu			1	3	7	7								4	1															1										
Nacolal Incised			2			3																																		
Dzocobel Red on Black																																								
Joventud Red			2			12																																		
Desvario Chamfered						1								1																										
Guitarra Incised			1			1																																		
Dzudzuquil Cream to Buff			3		4	5								1	1	1																								
Tumben Incised						2																																		
Petjal Red on Black and Cream																																								
Majan Red on Cream																																								
Tipikal Red on Striated																																								
Tumben Incised																																								
Unto Preslipped Striated Black																																								
Chancenote Unslipped		1	13	150	20				3	17	2	11	2	15			2			2			1		3	4			1	12		1			12	5		1			
Tancah Unslipped			1	47	39	7				14		10		30	1				2	1										3										
Xanaba Red (LF)																														1							8			
Huachingo																																								
Dzalpach Composite																																								
Sierra Red	1	2	28	257	95	10		2	8	14	1	25		85	9	1	2	2	6					1						4		1			4	1					
Laguna Verde Incised				3	3										3																									
Ciego Composite				2																																				
Lagartos Punctate				1																																				
Alta Mira Fluted																																								
Repasto Black on Red				1	3									2																										
Flor Cream				9	14							4		17																1										
Mateo Red on Cream				1																																				
Polvero Black					7									4		2														3										
Saban Unslipped			4	13						12		19	1																										
Yaxcaba Striated		7	20	82				5	1	36	12	38		7												10	2		1						2			1			
Xanaba Red		2	8	19				2	4	25	12	45	3	6							1		2		5	1	1	2						11	6					
Caucel Trickel on Red								1				12		5												5	3		2											
Tituc Orange Polychrome v. Tituc										2	2	3	1												1														
Huachinango Bichrome Incised																																								
Balanza Black		1		4								1	1												1														
Lucha Incised												1																											
Aguila Orange			1	13							1	8	2															1											
San Blas Red on Orange																																								
Dos Arroyos Orange Polychrome			5	10				3			2	10	1													1	1		1						2				
Caldero Buff Polychrome																																								
Cetelac Fiber Tempered	1																																							
Elote Impressed			1	6				1				2																											
Yalchak Striated																																								
Maxcanu Buff								1	1			1	1																				1	1						
Hunabchen Red												1	1																										
Kanachen Black												1																											
Tituc Orange Polychrome v. Tituc																																			1				1	
Tituc Orange Polychrome v. Bandas											1																													
Tituc Orange Polychrome v. Camichin																																								
Dos Caras Striated																									22										1					
Sacalaca Striated		7																							17										1					
Encanto Striated v. Sacna	1	2	1						40	7	2									8	7		7		20	6		1							3			1			

Yo'okop Operation 1-6

	OP. 1							**OP. 2**												**OP. 3**					**OP. 4**							**OP. 5**			**OP. 6**						
Type	1/1	2/1	3/1	4/1	4/2	4/3		1/1	1/2	2/1	3/1	3/2	3/3	3/5	3/7	3/8	3/9	4/1	5/1		1/1	2/1	3/1	3/2		1/1	2/1	3/1	3/2	3/3	4/1		1/1	2/1		a/1/1	a/1/2	a/1/3	a/1/4	a/1/6	a/1/7	a/1/9
Arena Red	7	5	5						2	6	4	4	1													8				2	3					9			1		1	
Batres Red			4						1																																
Lakin Impressed																																				1					
Muna Slate (LC)	2	2	2						3	15	2	22	7	6							5	6				11	3		2	2	5					3						
Sacalum Black on Slate (LC)												6	1																	1											
Saxche Orange Polychrome		1							3	12																6	2		1							2			1			
Petkanche Orange Polychrome																																									
Juleki Cream Polychrome																																									
Chantori Black on Orange																																									
Sayan Red on Cream											1																														
Chum Unslipped			4									3																													
Yokat Striated	2		4	6				1				6	14								8					41							1	1		23	4		6	7	1	2
Yokat v. Applique																																									
Oxkutzcab Applique																																									
Muna Slate	9		5	5				3													6	1				19							1	4		2			1			
Sacalum Black on Slate			3	1				2													2					6															
Tekit Incised																																									
Tekit Incised v. Dzib																																									
Akil Impressed																																									
Teabo Red	1																									12															
Becal Incised																																									
Ticul Thin Slate																					1					7															
Tabi Gouged-Incised																																									
Dzitas Slate																																									
Balantun Black on Slate																										2															
Chacmay Incised																																									
Piste Striated																																									
Tohil Group																																									
Navula Unslipped																										11															
Yacman Striated																																									
Chen Mul Modeled																																									
Mama Red	1																																								
Unidentified	21	24	38	155	29	11		7		50	13	23	7	30	4	3					127	123	7	35		121	7	2	5	7	49		20	18		278	16	8	47	4		1
Total sherds	48	54	156	788	226	67		28	66	210	55	256	43	213	19	7	4	2	8		160	138	7	46		313	39	9	12	16	83		25	24		352	35	8	67	12	2	3

Yo’okop Operation 6

	OP. 6																																						
Type	a/1/11	a/1/12	a/1/13	a/1/14	a/1/15	a/2/1	a/2/3	a/2/4	a/2/5	a/2/6	a/2/7	a/2/8	a/2/9	a/2/11	a/3/1	a/3/2	a/3/4	a/3/6	a/3/8	a/3/9	a/3/10	a/3/11	a/3/12	a/4/1	a/4/6	a/6/1	a/7/1	a/8/1	b/1/1	b/2/1	c/1/1	c/1/2	c/1/3	c/1/7	c/2/3	c/2/4	c/2/5	c/2/6
Achiotes Unslipped																						1																	
Chunhinta Black v. Ucu															2																							
Nacolal Incised																																						
Dzocobel Red on Black																																						
Joventud Red																																						
Desvario Chamfered																																						
Guitarra Incised																																						
Dzudzuquil Cream to Buff																																						
Tumben Incised																																						
Petjal Red on Black and Cream																																						
Majan Red on Cream																																						
Tipikal Red on Striated																																						
Tumben Incised																																						
Unto Preslipped Striated Black																																						
Chancenote Unslipped							1				1				24	10		1	1	1	1				3							1		1	1		1	
Tancah Unslipped																																						
Xanaba Red (LF)										2																												
Huachingo																																						
Dzalpach Composite																																						
Sierra Red	1	1				1	1			2					11		2																1		1			
Laguna Verde Incised									1																													
Ciego Composite															2																							
Lagartos Punctate																																						
Alta Mira Fluted																																						
Repasto Black on Red																																						
Flor Cream																																						
Mateo Red on Cream																																						
Polvero Black																																						
Saban Unslipped																																						
Yaxcaba Striated						1									3	2					1				1							2					1	
Xanaba Red						6	10	2	1		4		1		117	33	4		1	2	1				9				2	6		1	3			1	2	
Caucel Trickel on Red											1				11	4					2				1					1		1					
Tituc Orange Polychrome v. Tituc																																						
Huachinango Bichrome Incised																																						
Balanza Black																1						1																
Lucha Incised																																						
Aguila Orange															1	1																						
San Blas Red on Orange																																						
Dos Arroyos Orange Polychrome						1		1			1				6	1			1	1									1	1								
Caldero Buff Polychrome																																						
Cetelac Fiber Tempered																																						
Elote Impressed																																						
Yalchak Striated																																						
Maxcanu Buff							1												1																			
Hunabchen Red																																						
Kanachen Black																																						
Tituc Orange Polychrome v. Tituc															1	1									1													
Tituc Orange Polychrome v. Bandas															1																						
Tituc Orange Polychrome v. Camichin																																						
Dos Caras Striated															4			2															2	1				
Sacalaca Striated																		21																1				
Encanto Striated v. Sacna															6	2												1	4									
Arena Red						1		1			1				3	3	1	1																				

Yo’okop Operation 6

	OP. 6																																				
Type	a/1/11	a/1/12	a/1/13	a/1/14	a/1/15	a/2/1	a/2/3	a/2/4	a/2/5	a/2/6	a/2/7	a/2/8	a/2/9	a/2/11	a/3/1	a/3/2	a/3/4	a/3/6	a/3/8	a/3/9	a/3/10	a/3/11	a/3/12	a/4/1	a/4/6	a/6/1	a/7/1	a/8/1	b/1/1	b/2/1	c/1/1	c/1/2	c/1/3	c/1/7	c/2/3	c/2/4	c/2/5	c/2/6
Batres Red																																					
Lakin Impressed																																					
Muna Slate (LC)											3					7	1	5																			1
Sacalum Black on Slate (LC)																		1		2																	
Saxche Orange Polychrome						2	1				1			1	23	5	1		1				1		1	1			1	1		2	1	3	1	1		
Petkanche Orange Polychrome																																					
Juleki Cream Polychrome																																					
Chantori Black on Orange																																					
Sayan Red on Cream																																					
Chum Unslipped						2				3																											
Yokat Striated				1	1	11	8	2		1	5				85	12				4	6							1	1			3	2		3			
Yokat v. Applique																																					
Oxkutzcab Applique																																					
Muna Slate				1		2	2	1	1						10	7				2								1	3			2					
Sacalum Black on Slate						1									3																						
Tekit Incised																																					
Tekit Incised v. Dzib																																					
Akil Impressed																																					
Teabo Red																																					
Becal Incised																																					
Ticul Thin Slate							1									2																					
Tabi Gouged-Incised																																					
Dzitas Slate																																					
Balantun Black on Slate																																					
Chacmay Incised																																					
Piste Striated																																					
Tohil Group																																					
Navula Unslipped																																					
Yacman Striated															7	2																					
Chen Mul Modeled												1			4																		2	2				
Mama Red																																					
Unidentified	1		2			27	21	35	7	11	8	1		2	213		11	11	4	17	18	2		2	9		1		17	11	1	5	19	2	1	3	5	7
Total sherds	2	1	2	2	1	55	46	42	10	19	25	2	1	3	537	93	20	42	9	29	29	4	1	2	25	1	1	3	29	20	1	15	32	10	7	5	9	8

Yo’okop Operation 6-9

	OP. 6																						OP. 7			Op. 8												OP. 9		
Type	c/3/1	c/3/2	c/3/3	c/3/6	c/3/7	c/3/8	c/4/1	c/4/2	c/4/3	c/4/6	c/4/7	c/4/8	d/1/1	d/1/2	d/1/3	d/1/4	d/2/2	d/2/5	d/2/6	e/3/1	e/4/1		1/1	1/2		1/1	2/1	3/1	4/1	5/1	6/1	7/1	7/2	8/1	9/1	10/1	10/2	11/1		1/1	2/1	3/1
Achiotes Unslipped																																								
Chunhinta Black v. Ucu																												1			2	1			1					
Nacolal Incised																																								
Dzocobel Red on Black																																								
Joventud Red																														1			2							
Desvario Chamfered																																								
Guitarra Incised																																								
Dzudzuquil Cream to Buff																														2	1		13	16		1	3			
Tumben Incised																																1								
Petjal Red on Black and Cream																																								
Majan Red on Cream																																								
Tipikal Red on Striated																												2												
Tumben Incised																																								
Unto Preslipped Striated Black																																								
Chancenote Unslipped								2			1													1		1	3	4	5		1	1			1				3	4	
Tancah Unslipped																																								
Xanaba Red (LF)												2														2					2									
Huachingo																																								
Dzalpach Composite						2	1				1																													
Sierra Red				1			1					1											1	2			6	2	7	1	19		7	12	57	18	2	11				1
Laguna Verde Incised																																	1	2						
Ciego Composite																																								
Lagartos Punctate																																								
Alta Mira Fluted																																								
Repasto Black on Red																																								
Flor Cream																														2	2	3			1					
Mateo Red on Cream																																								
Polvero Black																																	2							
Saban Unslipped																																								
Yaxcaba Striated			1			1		1												1								6	4	6									1		
Xanaba Red			1			2	1	3	3		1			4	3		1	1	1		1		1				2	5	2	6									1	
Caucel Trickel on Red		1		3		1		3																																
Tituc Orange Polychrome v. Tituc																																								
Huachinango Bichrome Incised																																								
Balanza Black																													1											
Lucha Incised																																								
Aguila Orange																												3	1											
San Blas Red on Orange																																								
Dos Arroyos Orange Polychrome				4			2		1																			5	2											
Caldero Buff Polychrome																																								
Cetelac Fiber Tempered																							1																	
Elote Impressed																																								
Yalchak Striated														1			2																								
Maxcanu Buff	1														1																										
Hunabchen Red									1																																
Kanachen Black																																								
Tituc Orange Polychrome v. Tituc	1																										1													
Tituc Orange Polychrome v. Bandas																																								
Tituc Orange Polychrome v. Camichin																																								
Dos Caras Striated							3																	6		4	3												6		
Sacalaca Striated							1		1															8		3	7												12	1	
Encanto Striated v. Sacna					1																			2														1		

Yo'okop Operation 6-9

	OP. 6																						OP. 7			Op. 8														OP. 9		
Type	c/3/1	c/3/2	c/3/3	c/3/6	c/3/7	c/3/8	c/4/1	c/4/2	c/4/3	c/4/6	c/4/7	c/4/8	d/1/1	d/1/2	d/1/3	d/1/4	d/2/2	d/2/5	d/2/6	e/3/1	e/4/1		1/1	1/2		1/1	2/1	3/1	4/1	5/1	6/1	7/1	7/2	8/1	9/1	10/1	10/2	11/1		1/1	2/1	3/1
Arena Red								1																															2		
Batres Red																										1	3														
Lakin Impressed																																									
Muna Slate (LC)		1																																							
Sacalum Black on Slate (LC)										2																													1		
Saxche Orange Polychrome						1	3				1		1	1										2			1												2		
Petkanche Orange Polychrome																																									
Juleki Cream Polychrome							1									1																										
Chantori Black on Orange											1			1																											
Sayan Red on Cream																																									
Chum Unslipped							1					2																													
Yokat Striated		1		1	14		4	9	4	1	5	3		9			11	1			1		2	8		11	18											11	1	
Yokat v. Applique																																									
Oxkutzcab Applique																																									
Muna Slate	3						8	1	3		4										6		3	8		38	14												29	1	
Sacalum Black on Slate	1	1						4	1		5																4														
Tekit Incised																										4	11														
Tekit Incised v. Dzib																										1															
Akil Impressed																																									
Teabo Red																							1	1		1	1														
Becal Incised																																									
Ticul Thin Slate							1					1												2		3															
Tabi Gouged-Incised																																									
Dzitas Slate																																									
Balantun Black on Slate																																									
Chacmay Incised																																									
Piste Striated																																									
Tohil Group																																									
Navula Unslipped																																									
Yacman Striated																							1			8	22													8		
Chen Mul Modeled													1										1				25														
Mama Red																										2															
Unidentified	3		3	2	2		9	11	5		1			4									4	30		2	41	7	8	1	6		8	1	11	12	3	4		55	1	
Total sherds	9	4	5	11	17	7	36	35	19	3	20	9	2	20	4	1	14	2	1	1	8		15	70		81	162	29	34	16	30	9	19	27	90	34	6	18		131	9	1

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Johan Normark

The Roads In-Between

Causeways and Polyagentive Networks at Ichmul and Yo'okop, Cochuah Region, Mexico

Does a culture exist or is it just an abstraction that we think we share with other people? If culture exists beyond human beings, as a transcendent structure, can materiality tell us anything of this culture apart from generalized statements on quasi-objects such as "economy", "cosmology" or "social organization"?

In this dissertation, the answer is no. It is argued that we must search for what is immanent to materialities and that is not a quasi-object related to something that is essentially human or humanly derived. The commonly used concept of "material culture" relates to such ideas.

The basis for this dissertation is to be found in the French philosopher Henri Bergson's ideas of an unbreakable duration, a virtual multiplicity which our mind breaks down to static fragments (actual multiplicities) from which we reconstruct the world through representations and social constructions.

Polyagency is a term for a process that generates becomings, differentiations and repetition. This intensive process produces individuations that are called polyagents (actual multiplicities). The French philosopher Gilles Deleuze's reworking of Bergson decentralizes the importance of the human being. It heads towards a posthuman condition and a neo-materialist and neo-realist ontology where the archaeological object is separated from its past human agents and their transcendent culture. This is in short the agenda of polyagentive archaeology.

To exemplify the workings of this posthumanist archaeology, the dissertation focuses on nine causeways at two medium-sized sites in the Maya area. Ichmul and Yo'okop are two neighbouring sites in southern Mexico. The causeways of the two sites seem to have been contemporary, constructed during the Terminal Classic period (A.D. 800 – 1100). Particular focus is set on five polyagentive assemblages; the triadic causeways and the aligned causeways of Ichmul; and the beads-on-a-string causeways, the non-aligned causeway and the unfinished causeway of Yo'okop. The triadic causeways radiate from an area covered by a church dedicated to the Black Christ of Ichmul. The beads-on-a-string causeways connect buildings and features related to water. A local approach is used in which the material nodes around Ichmul evolved very differently compared to the ones at Yo'okop.

Rather than seeing the causeways as cultural reflections of either centralization, social organization, cosmograms or ceremonial avenues as humanocentric archaeology has done (and thus limiting their studies to the past), the polyagentive analyzes see them as de-cultured actualized polyagents that have initiated and still initiate tendencies in their vicinity. The causeways are seen as processes that lie in-between the virtual and the actual.

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