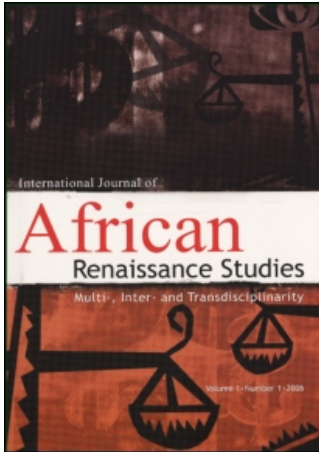


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ARTICLES

Cheikh Anta Diop: The social sciences, humanities, physical and natural sciences and transdisciplinarity

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Abstract

This article presents a critical exposition of the contributions of Cheikh Anta Diop to a scientific understanding of ancient African history, race, and the study of culture. It sets out the history of Diop's successful struggle against flawed Eurocentric scholarship which sought to deny the contributions of ancient black Egyptians to world civilisation. Diop's intellectual odyssey across physics, linguistics, through anthropology, ethnology, genetics and history is recounted here to demonstrate the limitations of mono-, inter- and multidisciplinary and clearly identifies him as a pioneer of transdisciplinarity in the field of knowledge production.

Keywords: Cheikh Anta Diop; ancient Egypt; origin of civilisation; African civilisation; transdisciplinarity; knowledge production; epistemologies; historiography; radio carbon; Ivan Van Sertima; Imi Amadiume; melanin dosage test; race; racism; genotypes; phenotypes; Eurocentric; Africentric

Introduction

The field of knowledge production and consumption has, since the beginning of the modern era, been dominated by Western scholarship, but all along this domination has been contested by the African world view. This Eurocentric domination was achieved partly through development of the natural sciences, which became the basis of scientific and technological advancement as well as economic and social development in the Western world. The development of science also formed the foundation for the emergence of a series of historical sciences which later came to

constitute the field of social and human sciences that the French historian of science, Michel Foucault, called *The order of things: An archaeology of human sciences* (1970). These ‘sciences’ did not develop naturally ‘in the order of things,’ but were the result of the demand for specific kinds of knowledge needed at the time. According to Foucault (1970, 344–345):

The epistemological field traversed by the human sciences was not laid down in advance . . . They appeared when man constituted himself in Western culture as both that which must be conceived of and that which is to be known. There can be no doubts, certainly, that the historical emergence of each one of the human sciences was occasioned by a problem, a requirement, an obstacle of a theoretical or practical order: the new norms imposed by industrial society upon individuals were certainly necessary before psychology, slowly, in the course of the nineteenth century, could constitute itself as a science; and the threats that, since the French Revolution, have weighed so heavily on the social balances, and even on the equilibrium established by the bourgeoisie, were no doubt also necessary before a reflection of the sociological type could appear.

The ‘order of knowledge’ thus became a necessity at the direction of modern society and the epistemological scientific field of knowledge became the servant of the system of the new powers that had constituted themselves on its foundation. Domination in production through competition and scientific and technological innovation became the means through which political domination over other peoples was achieved. As Edward Said (1992) the Palestinian literary critic observed, the European imagination of the Orient upon which Orientalism as a discipline and category of understanding of the ‘other’ arose, was an attempt by European imperialism to dislodge and disorient Orientals. This was necessary to control the production of knowledge about them and through that knowledge to exercise control and power over them. Said quotes a British prime minister who asserted that the British objective in seeking to have ‘knowledge of Egypt’ was not initially to assert military or economic power over the country, but rather that knowledge of Orientals was a form of power in itself.

Thus, it is not surprising that the first discourse and discipline of knowledge of the colonisers of the distant ‘others’ was Orientalism. Then came anthropology, a discipline dedicated to the study of ‘primitive societies’ in Africa and the Americas. As William Adams noted, whereas anthropology came to be the study of ‘the other’, the other social disciplines became the study of self (Adams 1998, 9). The ‘others’ included the Japanese who had a special discipline called Japanology to study them, and the Chinese were studied in a discipline called Sinology.

Inherently, the struggle to overcome this domination in the field of knowledge production was also a struggle by the natives (‘the other’) to regain their right to know themselves, and in the case of Africa, wrestle political power from the colonisers to establish independent national states. This struggle spanned many centuries and was waged against foreign invaders who challenged Africa’s achievements in the field of

knowledge production, beginning with the invasion of Egypt by the Syrians, Persians, Greeks and Romans. The first major African renaissance to assert the African heritage was undertaken by a group of Nubian-Ethiopian Pharaohs. One of the Pharaohs named Shabaka was able to record these historical achievements in a critical document known as the *Shabaka Stone* that dates to between 760 and 750 BC.

This recounting of African achievements in terms of the origin of knowledge has become known as the Memphite Theology or the Memphite Manifesto. It forms the foundation of an African epistemology in the modern era. It constitutes the theoretical and philosophical foundation for continued resistance against African enslavement and colonisation by Europe. This resistance was evident in the Haitian revolution and in the resistance of the African Maroon communities of the Americas and the Caribbean. This military and political resistance was accompanied by an intellectual resistance articulated by activists such as Boukman, Martin Delany, Henry McNeal Turner, Hosea Easton, Marcus Garvey, Kwame Nkrumah, Patrice Lumumba and Samora Machel (Carruthers 1999). Resistance against neo-imperialism and neo-colonialism in Africa continued after decolonisation of the continent.

It is within the continuum of this protracted intellectual warfare that the work of Cheikh Anta Diop became a beacon of light for an African renaissance in the late postcolonial period. His dedication to the recovery of the African peoples' heritage from the beginnings of civilisation was a life-long undertaking. Diop warned and challenged African scholars that unless they reasserted their ancient Egyptian heritage, African scholars would never be able to create a body of African human sciences and other scientific knowledge systems that could contest Western domination of the African world. He argued that any attempt by African historians to write African history could never be accepted as scientific 'so long as the relationship did not appear legitimate.' Diop equated such a futile endeavour to any attempt by Western scholars to write Europe's history 'without referring to Greco-Latin antiquity' while trying to pass it off as scientific knowledge (Diop 1974, xiv).

Diop's objective was to restore the African peoples' historical awareness and to 'reconquer the Promethean consciousness' of Africans of the ancient world (Diop 1974, xv). In so doing, he set out to re-establish an Africentric epistemology as a liberating process.

Africentric social and human sciences would seek to reposition African peoples in the new world. Its aim is to reclaim African heritage that had long been denied, stolen and plundered, as described in the work published by George James, aptly titled, *Stolen legacy: Greek philosophy is stolen Egyptian philosophy* (James 1992). Its aim was not the production of knowledge for domination over others, as had been the historic aim of European scholarship. Diop embraced this challenge and proved that racist Eurocentric social and human sciences could be deconstructed and replaced with a new scientific approach premised on the tenets of an African epistemology. In the first instance, this scientific approach drew on existing Eurocentred disciplinary approaches;

at the same time it went beyond them to create the basis for a transdisciplinary approach to the study of history and social relations. In so doing, Cheikh Anta Diop became one of very few scholars in the world to transcend the limitations of mono-, inter- and multidisciplinary approaches. It was this innovative approach that led to the development of a new humanistic philosophy directed at overcoming a racist epistemology that had contributed to genocide and suicidal wars in the modern world.

Diop's scholarly contributions

Right from the start of his eventful academic life, Diop embarked on the intellectual road of African revival, conscious of the need for a new African cultural renaissance. He began his graduate studies in Paris. Diop immediately encountered difficulties with his doctoral dissertation on ancient Egypt due to the racist prejudices of French scholarship. Ivan Van Sertima, renowned professor of African history, linguist and anthropologist, summarised the main lines of Diop's thesis as follows:

That Egypt was the node and centre of a vast web linking the strands of Africa's main cultures and languages; that the light that crystallised at the centre of this early world had been energised by the cultural electricity streaming from the heartland of Africa; that the creators of classical Egyptian civilisation, therefore, were not brown Mediterranean Caucasoids invented by Sergi, nor the equally mythical Hamites, nor Asiatic nomads and invaders, but indigenous, black-skinned, woolly-haired Africans; that Greece, mother of western civilisation, was once a child suckled at the breast of Egypt even as Egypt had been suckled at the breast of Ethiopia, which itself evolved from the complex interior womb of the African motherland (Sertima 1986, 8).

In the preface to his book, *The African origin of civilisation* (1974, xii), Diop writes of his years in Paris and his early engagement in the liberation struggle. 'I began my research in September 1946; because of the colonial situation at that time, the political problems dominated all others . . . I felt that Africa should mobilise its energy to help the movement to turn the tide of oppression: thus I was elected secretary general of the Democratic African Rally (RDA) students in Paris and served from 1950 to 1953.' Diop recalls that his first written reflection on the African situation appeared in the RDA student newsletter and was entitled 'Towards a political ideology in Black Africa.' This article contained a résumé of his later book, *Black nations and culture* (1954). Both the article and the book were based on his first doctoral thesis which, in his words, was 'immediately and roundly rejected' by his professors at the Sorbonne, on the grounds that it was 'unfounded'. Diop (1974, xii) wrote:

All our ideas on African history, the past and the future of our languages, their utilisation in the most advanced scientific fields as in education generally, our concepts on the creation of the future federal state, continental or subcontinental, our thoughts on African social structures, on strategy and tactics in the struggle for national independence, and so forth, all those ideas were clearly expressed in that

article. As would subsequently be seen, with respect to the problem of the continent's political independence, the French-speaking African politicians took their own good time before admitting that this was the right political road to follow. Nevertheless, the RDA students organised themselves into a federation within France and politicised African student circles by popularising the slogan of national independence for Africa from the Sahara to the Cape and from the Indian Ocean to the Atlantic ... We stressed the cultural and political content that we included in the concept of independence in order to get the latter adopted in French-speaking Africa: already forgotten in the bitter struggle that had to be waged to impose it on student circles in Paris, throughout France, and even within the ranks of RDA students.

Diop concluded that it was the cultural concept of independence that was to claim attention because the struggle was posed in terms of restoring the collective national African personality. Already at this stage he had identified three factors that constituted his concept of culture: the psychic factor (or the national temperament), the historical factor, and the linguistic factor. He regarded the first, the psychic factor, as an emotional aspect which he believed had been well explored by the artistic work of Aimé Césaire on negritude. Diop singled out the last two factors as 'both susceptible of being approached scientifically'. It was from this perspective – scientific exploration of history and linguistics – that Diop challenged African scholars to engage in a serious study of their societies in order to emancipate them from domination. Sertima stated that Diop's doctoral thesis, which had arrived at these same conclusions, had been rejected because it ran 'counter to all that had been taught in Europe for two centuries about the origin of civilisation, although the early Greeks themselves, who knew the Egyptians of that time and studied their metaphysics and their sciences, would have agreed in the main with Diop' (Sertima 1986, 8). In fact, Sertima continues, Diop's thesis was not entirely new. 'What was new was the formidable competence in many disciplines that [Diop] brought to bear to establish this thesis on solid, scientific foundations.'

Although originally rejected (with some difficulty), Diop was able to publish his dissertation manuscript in 1954. According to Sertima (1954, 8), the work 'earned its author international recognition.' Even then it took him another ten years and two more dissertations before he was granted a doctorate. These dissertations also came to be published under the titles *The cultural unity of Africa* (1959) and *Precolonial Black Africa* (1960).

The significance of Diop's work at this early stage of his academic career was that it challenged mainstream, European, misplaced 'scientific' historiography. Some scholars, though unconvinced by Diop's thesis, nonetheless accepted the Africentric view of the African origin of civilisation. What earned Diop this recognition was not the truth of his thesis, but that Diop had managed to methodologically prove his thesis by developing what Sertima called a 'formidable competence in interdisciplinarity and multidisciplinary' (Spady 1986, 98–99). Indeed, as we shall see below, Diop transcended the methodological approaches covered by the Eurocentric 'science' of

Egyptology and deployed the natural sciences and humanities to prove his point. By doing so, Diop put in practice a first attempt at transdisciplinarity.

Diop was trained specifically as a physicist, yet he was also able to study anthropology, archaeology, sociology, linguistics, prehistory and Egyptology during his tenure at the Sorbonne. His studies enabled him to work comfortably with these disciplines and to move between them and beyond them into transdisciplinarity. In addition to these disciplines Diop had the added advantage of having studied and worked with specialists in several scientific fields, for example André Aymard, Gaston Bachelard and André Leroi-Gourhan, all reputable specialists in their fields of scientific enquiry. Because of his interest in nuclear physics, he was recruited to work in a leading research laboratory with French physicist Frédéric Joliot-Curié who had close ties with Albert Einstein. James G. Spady has remarked that ‘it is not surprising that Cheikh Anta Diop became one of a very few Africans at home and abroad with access to the most advanced body of scientific knowledge’ (Spady 1986, 97–98). At a time when few scientists in the world were familiar with Albert Einstein’s theory of relativity, Diop was able to translate a major portion of this theory into his native language Wolof. This translation was no more unusual for Diop than his ‘comparative philological study of Wolof and Egyptian grammar and vocabulary’ (Spady 1986, 96–99). It was an exercise that helped him perfect his earlier thesis on Egypt while proving the point that one can use the enemy’s weapons to fight the enemy and at the same time develop new weapons that can empower oneself and the enemy to do better.

Diop was not a scholar tied to laboratory research only. He was a student and political activist in the advancement of his cause. He was convinced that the concept of history that he had developed could provide grounds for unity and continuity on the African continent. He was a strong believer in a future federated African continent strong enough to defend its heritage and to advance the cause of humanity. Diop was therefore the first Pan-African scholar to pursue both a scientific scholarly approach to his work and a practical political activism aimed at advancing the cause of ‘forging new and powerful political forces to transcend the instability and fragmentation, the lack of real pride and faith and sense of collective destiny in modern Africa’ (Sertima 1986, 10). Few African scholars and politicians have achieved this.

Cheikh Anta Diop returned to Senegal in 1960 and participated in the first World Black Festival of Arts and Culture held in Dakar in 1966. In 1974 his major publications were translated into English. This permitted Diop to extend the challenge posed by his work to a broader international level. One of his books, *The origin of African civilisation: Myth and reality* (1974), attracted considerable attention. In this book Diop established the basis for re-linking the ancient Nubian, Ethiopian and Egyptian civilisations to the civilisations of other African countries and their current practices. Later, in *Civilisation or barbarism: An authentic anthropology* (1980), Diop elaborated on this link.

However, it was at the 1974 Unesco International Conference on the Peopling of Ancient Egypt in Cairo that Diop gained recognition for his work from African scholars of higher rank and status. The outcome of this conference contributed greatly to meeting Diop's challenge to African scholars to locate their history in the achievements of ancient Egypt. The end result was the Unesco eight-volume *General history of Africa*. The paper presented by Diop at the Cairo conference appears as the first chapter in the second volume of that history. Unfortunately, Gamal Mokhtar, the editor of this second volume, chose to add a disclaimer at the chapter's end to the effect that 'the arguments put forward in this chapter have not been accepted by all the experts interested in the problem' (Diop 1980, 32). This disclaimer was not necessary, as each scholar was expected to produce scientific work on the basis of his or her evidence, and not on the grounds that their work was necessarily acceptable to all other 'experts.' If such were the case, no scientific development in any field would ever be possible. Moreover, the disclaimer by Mokhtar was not even true. The conference records reveal that experts who had arrived at the conference intent on refuting Diop's work, found themselves overwhelmed by the evidence Diop had marshalled to substantiate his conclusions. The Unesco conference report wrote this about the quality of the work presented by Diop and Theophile Obenga (a leading African Egyptologist, linguist and follower of Diop who had assisted with the presentation):¹

Although the preparatory working paper sent out by Unesco gave particulars of what was desired, not all the participants had prepared communications comparable with the painstakingly researched contributions of Professor Cheikh Anta Diop and Obenga (Mokhtar 1980, 58–83).

As already pointed out, Diop's main contribution to African knowledge was the challenge he posed to the Eurocentric (and racist) understanding of the world that denied Africa's historical achievements. Because of the centrality of racism prevalent at the time in European conceptualisation of the 'other' (and especially the African 'other'), Diop considered race as a crucial factor in critiquing Eurocentric scholarship and in developing his alternative epistemology and philosophy of history and human relations. The melanin dosage test was developed as determinative in proving the race origins of ancient Egypt. On the other hand Diop's two-cradle theory and institutional comparative study of the two cradles contributed to a new understanding of the differences between the two races, black and white, and their cradles. The goal was to develop an objective scientific understanding of these issues in order to articulate a new non-racist philosophy. As we shall see below, and in the later sections, Diop succeeded in these tasks.

¹ For other examples of Obenga's work see *African philosophy the pharaonic period: 2780-33 BC* (Per Ankh, Popenguine 2004).

A. Race and racism

From the very beginning of his scholarly work, Diop drew attention to the fact that European scholarship was dominated by racial bias and prejudice and the presumption of European superiority over other races. He argued that this racism vitiated most European thinking and scholarship, and that the issue of ‘colour’ had indeed become a ‘blind spot’ in European thinking. Racism and good scholarship, argued Diop, are ‘completely incompatible’ and result in flawed ideas and conclusions. The reality of racism, Diop maintained, was based on the false premise that people with white skin were superior to people with black and non-white skin. These invidious and fallacious ideologies, which many liberals held (and some still hold), ‘grant the people of colour exclusive rights to a heaven of emotions, unbridled atavistic impulses, and mindless passions.’ On the other hand, Europeans and Euroamericans claim for themselves exclusive rights to the world of ideas and the earth’s riches (Moore 1986, 241–242).

Diop observed that the real challenge to these spurious white supremacist theories disguised as scholarship was the Nile Valley – unassailable evidence that it was the black world (and black Africans) ‘through their mastery of science that had brought mankind out of prehistory to the first civilisation’ (Carew 1986, 24–25). Diop pointed out that a Eurocentric approach to the study of the Nile Valley could not handle the complexities of the ancient civilisation. He noted that when it came to the study of ancient Egypt, this ‘pseudo-scholarship’ placed undue emphasis on ancient Egyptian mysticism, magic and religious rituals which they did not comprehend. They did this to create false images and fictionalised distortions of ancient Egyptian civilisation in the service of their racist project.

Diop did not obscure the significance of race in the European psyche. He demonstrated that racism was manifest during the Roman occupation of Egypt and he provided evidence of its persistence. His studies indicated that towards the end of the Alexandrian period (especially at the end of the Greek occupation and before the Roman occupation), racist discriminatory practices were put in place against the Egyptian blacks in their own homeland, just as later European racists would do in their colonies and former colonies.

Egyptians were even barred from entering Alexandria and living in certain residential areas. Residential segregation existed at that time predicated along racial lines. But the Greeks and Romans enforced it against the Egyptians. This is made explicit in the colonial legislation of the epoch. Racism therefore existed in Antiquity. From the Greco-Roman period right down to the Middle Ages we can document its progression. We all know the rest (Moore 1986, 242).

Diop further observed that this early racism had debased the African Egyptians to a ‘half-animal’ stage. For this reason, he probed further into the issue of race. He rejected Eurocentric scholarship which denied the existence of race in theory while at the same time practised racism and racialism in their daily lives. Diop argued that

his studies had shown that the concept of race was crucial to understanding social relations and historical events and could therefore not be ignored. He demonstrated how Eurocentric scholars acknowledged and indeed defended the existence of race when it came to social relations. These scholars used their denial of race as a defence against any denunciation of racial discrimination under the flawed syllogism that if race did not exist, then racial discrimination could not exist. Diop observed that while white scholars denied the concept of race, they indirectly acknowledged it in the identification of certain diseases. For instance, sickle-cell anaemia was described as afflicting only blacks, whereas thalassaemia was described as a disease 'prevalent mainly in the region of the northern Mediterranean,' with no reference to any particular racial group. Diop concluded that such 'reasoning' was 'fraught with ideology,' despite the fact that both the white and yellow races came from the mutation of a black man and woman (Finch 1986, 236).

Diop uncovered deeper epistemological principles underlying Eurocentric understanding of race. He pointed out that racial classifications premised on anthropological traits of particular groups were established to not confuse the labelled group with members of other groups. In this respect, two aspects of conceptualisation had to be distinguished: genotype, which refers to the genetic constitution of an individual organism, and phenotype, which refers to the observable characteristics of an individual due to interaction of this genotype with the environment. Behind the confusion of these two concepts lay ideological machinations to obscure the issue of race. According to Diop, these two characteristics of an individual have different social and economic implications in real life. He noted that if one examines the genotypes of two individuals (e.g. a Zulu and a Swede), the two are the same. But this categorisation alone would be misleading about the social, cultural and historical beingness of the two individuals. In the end it is the phenotype that matters because it reveals physical differences in the appearances of the two individuals, and it is these differences that determine whether one belongs to the superior or the inferior social category. For Diop, throughout the history of human relations, it was the phenotype that determined how people were categorised and treated socially and economically. From this standpoint, Diop observed that this was the true issue behind racial categorisation. The laws of a class struggle based on historical materialism, he argued, applied only to a society that had previously been made ethnically homogeneous by violence. He criticised scholars who engaged in analyses of ethnic violence without identifying the true significance of phenotype in Western scholarship:

In the course of history, when two groups of human beings have argued over a vital economic space, the slightest ethnic difference can be magnified, temporarily serving as a pretext for social and political cleavage: difference in physical appearance, language, religions, morals, and customs ... Conquerors often misused these arguments to enforce their domination on ethnic bases: man's exploitation of man then assumes an ethnic modality, social class, in an economic sense, for an indefinite period of time fits the outlines of the ethnic group of the conquered race (Diop 1981, 124–125).

Diop's analysis applies to all types of conflicts – not only to those between whites and blacks – but also to inter- and intra-ethnic conflicts and to attempts at genocide in Europe, Africa and elsewhere. This is why, whenever phenotype relationships were not favourable to whites, things became problematic. Diop was not encouraging Africans to be racist in their turn. He was merely observing a reality that explained why blacks were discriminated against when prevailing ideologies preached genetic uniformity and at the same time adopted discriminatory measures based on phenotype. His purpose was to draw the attention of Africans to this reality in order to find a way to circumvent it. The idea was to enable Africans to rewrite world history from a scientific standpoint that recognised the role of black people in history, free from the distortions engendered by discrimination against their skin colour and phenotype:

It means that it is now possible to build up a corpus of Negro-African humanities resting on a sound historical basis instead of being suspended in the air. Finally, if it is true that only truth is revolutionary, it may be added that only *rapprochement* brought about on the basis of truth can endure. The cause of human progress is not well served by casting a veil over the fact. The rediscovery of the true past of the Africans should not be a divisive factor but should contribute to uniting them, each and all, binding them together from the north to the south of the continent so as to enable them to carry out together a new historical mission for the greater good of mankind; and that this is in keeping with the ideal of Unesco (Diop 1980, 51).

These were the concluding remarks in Diop's submission to the 1974 Unesco conference in Cairo where he disproved the Eurocentric mystification of race in ancient Egypt. In this way Diop laid a solid foundation for combating race and racism based on truth:

So race, even though it is a relative notion, corresponds to something which allows us to situate individuals in their sociogeographic cradle, so to speak, and to distinguish them one from another. At the level of their phenotype we are able to follow their historical relationships. It is the phenotype which has given us so much difficulty throughout history, so it is this which must be considered in these relations. It exists, is a reality and cannot be repudiated (Finch 1986, 236).

In the course of his efforts to identify the human beings who had 'peopled Egypt,' Diop developed a scientific method that settled this issue beyond question –the melanin dosage test.

B. The melanin dosage test

The skin colour of the ancient Egyptians is a crucial issue when the work of Cheikh Anta Diop and his transdisciplinary approach are reviewed. This issue has long been distorted by Eurocentric scholars. Diop argued in his paper to the 1974 Unesco conference that it was possible to 'determine directly the skin colour and hence the ethnic affiliation of the ancient Egyptians by microscopic analysis in the laboratory'

(Diop 1980, 20) (subtly challenging the credibility of his opponents whom he doubted had ever studied the question). Diop reported that he had succeeded in developing a melanin dosage test which was scientifically able to determine the skin colour of the ancient Egyptians. What he required for testing, of course, were the skin remains of the ancient Egyptians. Because of the hostility and obstructive behaviour of the Egyptian bureaucracy guarding the museums, Diop encountered great difficulty in testing the mummies. Yet even with the small samples that he was able to obtain, he demonstrated conclusively that Ramses I had been a black Pharaoh.

Diop confirmed his finding by using another method of racial classification called osteological measurements. It was developed by the German scientist Lepsius at the end of the nineteenth century, and was generally accepted in the field of physical anthropology. In contrast, the craniometry measurements developed by Americans and Germans were judged to be susceptible to manipulation, but were the preferred method of Egyptologists in classifying the race of the ancient Egyptians. Diop pointed out that subsequent methodological progress in the domain of physical anthropology 'in one way undermines what is called the "Lepsius canon," which in round figures, gives the bodily proportions of the ideal Egyptian: short-armed and of Negroid or nagrito physical type' (Diop 1981, 20).

The melanin test that Diop developed later became an accepted method to determine the colour and race of humans.

C. The two-cradles theory

One of the most incisive theories Diop developed in his analysis of the differences and relationships between the cultures of the northern world and the southern meridional cradle has been extensively debated. Diop's two-cradle theory essentially posits two models of human culture, northern and southern, each influenced by the ecological environment in which humans evolved. Jacob Carruthers (1984) has researched and written extensively on ancient Egypt and argued that Diop's two-cradle theory was revolutionary in this respect, although he talks interchangeably of two 'centres' or 'cradles' of humanity. Diop also refers to a zone of confluence, which appeared to be a third cradle lying in between the other two cradles. Diop calls the first the African cradle. It is located along the Nile from the Great Lakes region of Lake Nyanza to the Delta on the Mediterranean Sea. He locates the second cradle in the north of the Mediterranean geographical region. The zone of confluence was situated somewhere in the middle, around the Muslim world.

This division goes to the root of the distinctions between superior and inferior societies Eurocentric scholars tried to advance. The hideous nature of this distinction, which persists in one form or another, is the more significant because it goes to the core of the meaning of modern society. It is crucial to delve deeper into this issue to reveal the spiritual-moral basis of Western-imposed capitalist society and to search for a new society that is more balanced and equitable.

Indeed, Diop was so preoccupied with this issue that he devoted one of his very first books, *The cultural unity of Black Africa: The domains of matriarchy and patriarchy in classical antiquity* (1989), to its study. He did this to expose what Imi Amadiume (who wrote the introduction to the Karnak House edition) called ‘racist anthropology’ (1989, xix). The two anthropologists whose disciplines Amadiume recommended ‘be banned altogether’ and whom Diop too had severely criticised were Bachofen (1861) and Morgan (1970); Bachofen for his understanding of the ancient matriarchy, and Morgan for his understanding of the family.

Diop (1989, xi) argued that Bachofen articulated an evolutionist theory of matriarchy based on an analysis of classical Greek literature that is drawn more from mythology than from historical experience. Amadiume explained that the Greeks had engaged in generalisation based on limited experience to build models of whole human social organisations and evolution during a period when there had not been marriage but ‘barbarism’ and ‘sexual promiscuity.’ This, in Amadiume’s view, led to the imposition of a ‘masculine imperialism’ of patriarchy as the superior system throughout the world. Morgan’s analysis of the Iroquois Indian family of North America was based on a universalisation of ethnocentric concepts of the nuclear family structure of European societies. It postulated four (universal) stages in the evolution of marriage and the family – from primitive ‘promiscuous intercourse’ to the nuclear family. In so doing, Morgan drew false attention to the matrilineal and matriarchal ‘barbarism’ of the non-European family and the ‘civilised’ Greeks. This in turn led to the conclusion that the Roman patriarchal, monogamous marriage was the superior system. This falsehood later helped to establish racist norms and values regarding female culture in parts of the world where the Romans became dominant.

In attacking these theories (including Frederick Engel’s (1942) commentary on them), Diop sought to establish the true essence of the two systems which he called ‘cradles’. Amadiume argued that Diop’s position set the record straight by emphasising that given the influence of ecology and social systems (including the economy), matriarchy was a specific historical experience and not a universal phenomenon. This is what led him to articulate a double cradle based on the geographical locations of the different historical and cultural experiences.

(i) The southern meridional cradle

According to Diop (1989), the southern meridional cradle was based in Africa, the continent with an historical experience in which the mother was incorporated into the spiritual and moral domain as central to the reproduction and maintenance of the family and society in general. Thus, very early in the beginning of the universe, the chthonic-agrarian triad of sky, earth and vegetation became identified with the demi-god triad of Osiris-Isis-Horus. This representation was related to observation of the natural process in which the cycle of plant life was linked to the emergence of mother earth and agriculture appeared in the human consciousness as a goddess that

was periodically made fertile by the sky (the sun, rain and weather conditions).

Diop believed that the agrarian and matriarchal character of the Egyptian society of the Pharaohs was amply explained in the myth of Osiris and Isis, where, according to James Frazer in his book, *The golden bough* (1996), Osiris is the god of corn, the spirit of the trees and the god of fertility. According to Frazer, Isis was originally the god of fertility and the mother-goddess 'who had influence and love everywhere, among the living as well as among the dead, and consequently Isis and Ceres were identified with each other' (Frazer 1996, 460–462). From these observations Diop was able to draw two fundamental cultural and civilisational features of the southern meridional cradle: it was confined to the African continent and characterised by the matriarchal family. This cradle exhibited the following attributes: the creation of the territorial state in contrast to the Aryan city-state; the emancipation of women in domestic life; xenophilia (non-hatred of foreigners); cosmopolitanism; a sort of social collectivism having as corollary a tranquillity going as far as a lack of concern for tomorrow; a material solidarity of right for each individual which makes moral or material misery unknown to the present day, and the existence of people living in poverty where none felt alone and in distress.

In the moral domain, this cradle showed an ideal of peace, justice, goodness and an optimism which eliminated all notions of guilt or original sin in religion and metaphysical institutions. The types of literature most favoured in this cradle were the novel, tales, fables and comedy. Diop argued that the southern cradle had favourable environmental conditions that were conducive to the development of agriculture as a material basis of human existence (hence the more positive attitude to nature) whereas the northern cradle was less favourably endowed and therefore exhibited its own specific temperament (Diop 1989, 178–180).

(ii) The northern cradle

The northern cradle was confined to Greece and Rome. It was characterised by the patriarchal family and the city-state where Fustel de Coulanges describes an 'impassable mountain' between two cities (Diop 1989, 181). In the city-state, individuals became outlaws once they went beyond the state boundaries. As a consequence, citizens of the city-states developed intense internal patriotism as well as xenophobia. Individualism, moral and material solitude were vital for existence and survival. The northern cradle regarded war as ideal, its citizens engaged in violence, crime and conquest. Guilt and acceptance of the concept of original sin, while absent from the southern cradle, were present in the north. The literary style in this cradle takes the form of tragedy and drama (Diop 1989, 177–180).

Diop attributed the ferocious nature that prevailed in the northern cradle to the harsh environment. According to his analysis, the environment led the nomad to adopt a plundering culture with a patriarchal social culture as the preferred system. It caused individuals to develop a combative, competitive disposition as well as feelings

of hostility against nature and contempt for god. It is this culture that gave birth to the militant civilisations of Greece, Rome, Arabia and Germany 'which have always repaid their African benefactors with bloody conquests, exploitation and slavery' (Carruthers 1984, 16–17).

Carruthers did not agree with attributing the cultural determinant of the behaviours as being primarily environmental. While regarding the double cradle as 'quite a useful working hypothesis,' he nevertheless raised 'several serious questions' about Diop's formulation of the environment as a determining factor (1984, 16–17). Carruthers also questioned the spatial and chronological directions of the southern cradle (and these are important in any effort to amplify Diop's thesis).

In her introduction to Diop's book, Imi Amadiume also disagrees with the Diop theory of 'two irreducible systems' as 'difficult to accept academically, given the limitations imposed on organic approach to societies which leads to the portrayal of society as static rather than dynamic in itself' (Diop 1989, xi). However she did agree with the irreducibility of the matricentric unit 'as a social fact.' It is difficult to understand how one fact can be dismissed on 'academic' grounds while a similar fact is acceptable as a 'social fact.' Amadiume raises methodological questions that we are unable to go into here. She also raises the issue of African women's political power in history and wonders how women who wielded power as Diop depicted, could put on men's garments as a sign of their power. Here, Amadiume's modern feminism, which she decries in her text, comes out in its true colours. She does not realise that this duality of African women in power in the ancient world was also a dualistic reflection of their view of the world and the need to represent the other sex in their power that was characteristic of ancient systems. This duality can still be found in current African monarchical systems, for example in Swaziland where the king is made to rule together with his sister or mother or senior wife.

Although Diop argues that the two cradles were distinct, he also maintains that it was only through contact with the southern cradle that people in the northern cradle were able to broaden their concept of the state to encompass the idea of a territorial state and empire. He demonstrated his argument by observing that the so-called Solon reforms of ancient Greece occurred only after Solon had visited Egypt and after he had observed the workings of the Egyptian political and social systems. The development of world civilisation was nurtured by this interaction between the two cradles.

(iii) The zone of confluence

As noted above Diop mentioned another small cradle that he described as lying in the riverine civilisations somewhere 'in the area now known as Pakistan' marking its eastern limits. Otherwise he locates this zone in the Harappan civilisation, named after its largest and most studied site, Harappa, which flourished from 2200 BC to 1700 BC (Diop 1989). At its height Harappa engaged in regular commercial relations with Iraq and Iran. According to Diop the originators of this civilisation

were black. This statement is proved by the physical evidence of skeletal remains and eyewitness accounts preserved in the Indian Rig Veda as well as in artistic and sculptural remains. Further evidence is found in the regional survival of the Dravidian languages (including Brahui, Kurukh and Malto) and the essential role of these languages that are now being used to decipher Harappan script.

Diop regarded this zone of confluence as the middle ground or the overlap between the southern and the northern cradles. He places these and other civilisations, including the Arab lands, western Asia and Byzantium from which the Semitic world emerged, within this zone. Diop added that each of these zones had, apart from racial differences, cultural distinctions peculiar to each (Rashidi 1986, 134–136). According to Diop, ‘anthropologically and culturally speaking, the Semitic world was born during prehistoric times from the mixture of white-skinned and black-skinned people in West Asia (Diop 1974, xv). Diop argued that on the basis of this evidence it was necessary to go beyond a working hypothesis on this matter and into the realm of provable fact. The way to do this was to conduct research to understand the ethnic composition and evolution of a geographical region ‘encompassing probably the most complex and confusing collection of physical types in the world’ (Rashidi 1986, 137).

D. Institutional comparative study of the two cradles

Having applied ethnology to make a reverse study of the two cradles, Diop also used history to study European institutions and compare them to African ones. His goal was to demonstrate that the northern cradle had benefited from the more humanistic systems of the southern cradle. Diop was careful to show interaction between the two cradles, but always emphasised the African achievement as the original human experience which informed all other civilisations. In fact, Diop was not alone in drawing attention to this African/Egyptian originality. The Greeks themselves had done so, and later the German psychoanalyst Carl Gustav Jung also drew attention to the fact that it was Egypt that had developed the archetypes that later became the basis of Western civilisation. These archetypes, according to Jung, were the Egyptian peoples’ ‘collective consciousness’ that had ‘streamed’ out of Egypt to the other peoples of the world (Rice 1997, xi). Jung was the first to observe through his studies of analytical psychology that the collective unconscious built in Egyptian archetypes was common to all humankind, in all times, everywhere in the world. According to Rice 1997, xi–xii):

The acknowledgement of the common psychic inheritance of (hu)mankind is deeply exciting for it allows us to begin to comprehend the motivations of the series of mythically-based belief systems which have bemused our unfortunate species, blessed and cursed, in equal measure, as it sometimes seems, with the faculty of consciousness. If this principle be accepted, namely that it is possible to begin to understand the psychological imperatives which have driven humankind as a whole through its history, then it follows that the same principle can with advantage be applied to the study of history, the record of human sciences and the acts of men considered collectively.

Diop's attempt to carry out this comparative analysis was one of his first efforts to prove his two-cradle theory. The study was documented in his book, *Precolonial Black Africa: Comparative study of the political and social systems of Europe and Black Africa, from antiquity to the formation of modern states* (Diop 1987). Here Diop began with analysis of the caste system and how the system operated within the two cradles. He demonstrated that the caste system originated in Africa from a division of labour 'which was monarchical (for one never finds castes where there are no nobles).' But Diop also admitted that the system could have evolved as part of the specialisation of labour within the clan system. He drew a distinction between the conditions of the caste system in Africa and those of the plebeians in ancient Greece and the Sudra in India.

In analysing the sociopolitical evolution of the ancient city-state, Diop borrowed heavily from the work of Fustel de Coulanges (1873) who had written extensively on the character of the Greek city-states and their inhabitants. Diop noted that the Aryans, as long as they were relatively isolated in their northern cradle, did not conceive of a political, judicial and social state organisation extending beyond the limits of the city. 'The nation state as a "territory" comprising several cities or that of empire without question came to them from the southern world, and in particular from the example of Egypt' (Diop 1989, 21–22). He quoted Coulanges as having written that 'every city, even by the requirements of its religion' was independent: 'It was necessary that each should have its own code, since each had its own religion, and the law flowed from the real religion ... Each had its own money ... and its own weights and measurements' (Diop 1989, 22).

Diop related the changes in territorial state organisation to the 'movement of ideas,' and especially philosophical ideas that began to affect the political arena of Greece. This movement included the ideas of Anaxagoras, the Sophists, Zeno and the Stoic school as well as those of philosophers such as Socrates and Plato. Diop linked the movement of these ideas to the universalist philosophies which emerged during the rule of Amenophis IV of the eighteenth dynasty in Egypt. The Greeks were able to formulate these ideas to generate political consequence within Greece.

As we saw above, Diop singled out the work of Solon as having been significant in this respect. Solon, who had gone to Egypt 'to draw inspiration from the laws of their country,' was able to bring back to Greece some of these ideas which he incorporated into his legislative programme. This legislative programme had a real impact because 'before him a client could be sold to pay off a debt and could not own land because of the "sacred boundaries" which institutionalised the ritual of ownership by a patron of the soil he cultivated.' But Solon's new legislative programme 'overturned the sacred boundaries, thus allowing poor peasants to become landowners.' Solon subsequently forbade the bonding of self to pay a debt (Diop 1989, 27–28).

After the Solon reforms it became possible for plebeians to have an audience before a tribunal as clientship became voluntary and contractual. Henceforth there

were two classes of people: the owners who formed the ruling aristocracy and the 'landless of sorts' who comprised both the plebs and the former clientele. This laid the basis for a social revolution. It brought further social changes in the political system against the moneyed class who had emerged as the 'tyrants of the people.' Thus the Solon reforms became part of and coincided with the triumph of the people against the old order, setting the ground for the Athenian democracy (1989, 27–28). Through this vigorous ethnological and historical analysis, Diop was able to demonstrate how the southern cradle influenced and humanised political development of the northern cradle in Greece.

Diop compared this system in the north with the system in Africa and examined a number of regions and countries that practised different kinds of political organisations. He demonstrated that ordinary Africans had rights under whatever constitution to possess land, etc., including the right of slaves to attain high office such as becoming a minister in the state system. (This was also demonstrated by Chancellor Williams (1989) in the case of the Mossi state.) Diop gave examples of matrilineal succession in the Ghana and Mali empires where women exercised political power. He quoted a text which required that the successor to the king be the son of the king's sister. The rationale was that while the sovereign could be sure that his nephew was indeed his sister's son, nothing could assure him that the son he considered to be his own was actually his (Diop 1989, 48). Diop quoted the French anthropologist Coulanges who studied a number of African systems, and came to the conclusion that:

The Black African world, which seemed to some so simple is simplified indeed, but only because of its internal logic. It is very complicated in appearance; creation takes on a sense that can be called philosophical. The Black Universe had seemed crude; it now turns out to be profoundly elaborate (1989, 60).

With transdisciplinary, methodological, sophisticated and flexible approaches, Diop was able to confirm the main theses he had set out to prove since the 1950s. Through a history of academic and activist involvement he was able to turn the Eurocentric world view upside down so that Africa could begin to see itself through its own epistemological looking glasses. He was able to demonstrate through European ethnology and history that Europe had gained from Africa and that the human link was a real one despite the different cultural traditions and world views in the two cradles. Diop also demonstrated through his studies that recognition of these different world views was the very condition upon which an understanding between the different ethnicities and races could be consciously resolved. Through a scientific understanding of the differences and commonalities, this methodological, nay, epistemological approach of Diop was revolutionary. We now look in more depth at the breakthroughs Diop achieved by using the multi-, inter- and transdisciplinary systems in the study of societies.

Diop's contribution to multi-, inter- and transdisciplinarity

A. Monodisciplinarity

When Cheikh Anta Diop first tried to enter the field of study of ancient Egypt, he found it was sealed off and marked 'for Europeans only.' He tells of the frustrations he suffered in trying to study Egyptology as a 'discipline' which European scholars, and by extension American scholars, had reserved for themselves. At first they identified themselves as philologists and through Egyptology they wrapped themselves in a self-interpretive closet in which they created a monodisciplinary methodological structure of self-interpretation and self-knowing called source criticism (Berlinerblau 1999, 30-32). As Martin Bernal, in his own attempt to enter this closet, was to find out, entry into this monodisciplinary structure was formidable (Bernal 1987).

Bernal began by launching an attack on these 'headquarters.' He accused them of one-sided and single-minded scholarship that used Egyptology to tighten their grip on Africa in order to continue to exploit it for their own interests and for the interests of the Western world. For his part, Diop accused these scholars of falsifying evidence in order 'to serve an infrastructure for the thesis of white superiority and the concomitant thesis of black inferiority' (Spady 1986, 96). He took steps to deal with the matter scientifically. By 1952 he had formulated the theory of cultural unity as we saw above. He had also tested the efficacy of Wolof in dealing with high-level scientific concepts through his translation of Einstein's theory of relativity. Equipped with these multidisciplinary achievements Diop embarked on challenging the Egyptologists. In this endeavour, he asked African scholars to join him in developing Egyptology in order 'to generalise Egyptian knowledge.'

It is by having the direct knowledge that we can leave the vicious circle, leave these debates behind, and to give Africans control of their real past. The African is trying to find his soul, his emotions, and his way of thinking. He is trying to rediscover himself and to eradicate all the complexities and confusion. It is the same for the American Black and all Black races. It is only through discoveries that one can try to overcome. The West has not continued to address Egyptology in the light of new findings. Too bad for them. The new ideology can go forward by the further study of Africans and we must push all the way with great determination for the advancement of these new studies ... (Finch 1986, 34).

The new studies that Diop called for was the deployment of research in many disciplines. Diop explained that the focus on ancient Egypt was to provide a basis for regeneration so that Africans could look at ancient Egypt in the same way Europeans looked at their Greco-Latin heritage: as their reference point. Hence the focus on ancient Egyptian culture, religion, language and science. The new studies had to break out of these monodisciplinary closets in order to show the Eurocentric so-called experts that even with their ideologically constructed disciplines and sciences, African scholars could come to better truths about societies.

B. Multidisciplinarity

Diop challenged African, & African-American and Caribbean scholars to combine forces, notably in the study of human prehistory. Diop's efforts thus far had freed the application of historical knowledge 'in such a way that it can provide a sound basis for interdisciplinary and transdisciplinary teams of African researchers charged with the responsibility of moving through future millennia' (Spady 1986, 99). Now he wanted African and African-American (today including the Caribbean, Central and Southern American) scholars to do more in this direction.

By implication, this meant adopting multidisciplinary and interdisciplinary approaches to research. These approaches were at first encouraged by the Social Science Research Council of New York and embraced by most scholars in the humanities and social sciences in research institutions and universities. However, as these approaches became better known and practised, the researchers encountered difficulties due to the increasing specialisation and fragmentation of fields of study. The pressing need to overcome this fragmentation of the different disciplines and subdisciplines increasingly called for multi- and interdisciplinary methods.

Multidisciplinarity came to mean undertaking research in several disciplines at the same time so that the selected topic could be enriched by the perspectives of several disciplinary approaches. However, it soon became apparent that multidisciplinarity, while bringing this wider perspective, did so at the exclusive service of the home discipline of the scholar adopting this approach. Thus, while multidisciplinarity went beyond disciplinary boundaries, it remained encaged within the limits of the home discipline which controlled their use according to prevalent demands and needs. Even then, its goal remained limited to the framework of disciplinary research and did not go beyond it.

C. Interdisciplinarity

The goal of interdisciplinarity is, on the other hand, different to that of multidisciplinarity. It aims at transferring methods from one discipline to another. Three degrees of interdisciplinarity have been identified: (a) the degree of application, for instance when methods of nuclear physics are transferred to medicine, leading to new treatments of cancer; (b) the degree of epistemological flexibility, as when methods of formal logic are transferred from philosophy to jurisprudence to generate new ways to analyse the epistemology of law, and (c) the degree of generating new disciplines, as when mathematical methods are transferred to meteorological phenomena or stock market operations, generating chaos theory or better stock market management (Nicolescu 2005, 2).

At another level, interdisciplinarity is said to involve four types of activities: (1) exploratory interdisciplinarity which involves borrowing ideas and methods from other disciplines; (2) team-based interdisciplinarity in which scholars from different disciplines collaborate to solve a problem or understand a phenomenon; (3) paradigmatic

interdisciplinarity which arises from synthetic theories that operate across disciplines such as Marxism, feminism and postmodernism, and(4) cross-over interdisciplinarity in which new fields are constituted from overlapping areas of separate disciplines such as biochemistry and psycholinguistics' (Wasserstrom 2006, B5).

Diop insisted that the foundation of the study of African regeneration lay in the study of African prehistory. He claimed to have discovered the 'historical principle' that proved prehistory to be 'the motor of history.' In Diop's view, 'what happened 10 minutes ago or 10,000 years ago occupies the same space in consciousness.' This, for Diop, constituted the historical principle which could reinvigorate prehistory and position it to be at the service of modern Africans in the search of their identity. Therefore history is at the very core of life and to lose one's historical memory is to lose one's soul. When a people lose their history they cease to have a sense of self (Finch 1986, 228). Since prehistory is the point of departure and since Africans are at the beginning of rediscovering this knowledge for the proper understanding of themselves and others, Diop thought that it was the point 'without which other studies – even African history – are left hanging in the air' (Finch 1986, 231).

The separation of man and animal took place in Africa and not elsewhere . . . So, it is from that point that you must start to understand all the rest of evolution: how Africa was peopled, first; how the first men born in Africa confronted nature, how they took on the challenges of nature to create civilisation; how this civilisation spread across the continent of Africa toward other continents; and how the world was peopled. This is the first step to complete and it will condition all the rest. It is when this phase of humanity has been committed to memory that what comes after is understood. It is for this reason that prehistory is of particular importance, and African prehistory is not only important for African history but for all of world history, because it allows each continent to know how it is peopled, all ideology put aside.

It is in this context that Diop raised the issue of disciplines that could be deployed to accomplish this task. He pointed to the importance of linguistics in the rediscovery of Egypt. Diop's work in linking the ancient Egyptian and African languages was key in creating an understanding of history as a cultural unity of people. He advocated the use of interdisciplinary teams to indicate the direction the research should take 'because no one person can exhaust the material; to organise the work to be done rather than to exhaust the subject matter oneself' (Finch 1986, 231). It would be tedious to enumerate the different scientific disciplines required to be really productive in the field of historical investigation. The way to overcome this difficulty might be to 'create teams' which would integrate scientists from various disciplines so as to respond to the necessities of collective work (1986, 232).

To Diop, an interdisciplinary approach was crucial for African scholars on the continent and in the diaspora. However, this work had to be strictly scientific. If a team of palaeontologists and pre-historians went to conduct research or obtain artefacts and documents in Kenya in order to examine the region where humanity was born, this

would have to be done in such a manner that the results were available to everyone – a universal approach run by Africans.

Conclusions must be reached to show the scientific community so that that community would be able to come and look at the documents and refute them, if they want to or if they can. This is possible. Even now it's possible to do it. We have people who can, but they are scattered throughout the world. If we make an effort to regroup, we can have a minimum number of people to form a team. It is in this direction that our researchers must go. I can tell you that my laboratory was doing Radiocarbon dating until now. But it has just established a Department of Potassium Argon Dating. It's this method that made it possible to date all the fossils that were found in the region of Kenya (Middleton 1986, 291).

Diop believed that 'teaming up' like this and using all the resources available in Africa, both human and technical, to engage in scientific work, would provide Africa with all the expertise it needed. Through this approach African people would emerge from the darkness of colonialism and their collective amnesia to rediscover their historical memory and embark on African renaissance. 'Our history from the beginning of mankind, rediscovered and relieved as such, will be the foundation of this new personality' (Diop 1986, 320). Diop concluded that this approach would have to transcend the academic sphere and encompass the everyday lives of Africans:

A pedagogical effort must be made to assimilate these indispensable notions of the consciousness of our community. In doing this, we will have contributed significantly to the restitution of our own heritage, to bring it alive in the consciousness of our people. It is not a question of programmes. It is also, perhaps, a modest way in which to contribute to the harmonious integration of these communities in the cultural fullness of America (1986, 320).

D. Transdisciplinarity and African history

Today Basarab Nicolescu is credited with having developed transdisciplinarity in his book, *The manifesto of transdisciplinarity* (2002). Nicolescu defines transdisciplinarity as concerning that which is at once between the disciplines, across the different disciplines, and beyond all the disciplines. Its goal is to understand the great world of which one of the imperatives is the unity of knowledge. Nicolescu asks whether indeed there is something between and across disciplines. From the point of view of 'classical thought,' he answers that there is absolutely nothing between two opposite entities: 'The space in question is empty, completely void, like the vacuum of classical physics' (Nicolescu, 2). However, due to the findings of quantum mechanics and quantum physics, with their inherent recognition of different levels of reality, this 'excluded middle' has become occupied:

In the presence of several levels of Reality, the space between disciplines and beyond disciplines is full, just as the quantum void is full of potentialities: from quantum

particle to the galaxies, from the quark to the heavy elements that condition the appearance of life in the universe . . . The transdisciplinary knowledge TK, corresponds to a new type of knowledge -- *in vivo* knowledge. This new knowledge is concerned with the correspondence between the external world of the object and the internal world of the subject. By definition, the TK knowledge includes a system of values (2002, 2-3).

If these are discoveries of new epistemologies leading to new knowledge, then it must be admitted that as early as the 1950s Diop was grappling with the creation of a value-laden knowledge reflecting the African world view. In moving beyond Egyptology and anthropology, Diop developed the world's first radiocarbon laboratory. This laboratory was able to advance 14 dating methods which are still used today and provide scientific data previously unattainable within the monodisciplines of anthropology and Egyptology. One of these tests, as we saw above, was the melanin dosage test. It was able to resolve the highly contentious (and emotional) issue posed by Egyptology and anthropology, namely the racial composition of the ancient Egyptians. In so doing, Diop changed the dominant view of the prehistory of Egypt and Africa.

What Diop did here was to move between history (Egyptology), anthropology and the physics laboratory, occupying all the empty spaces between them in order 'to bring facts to life to support the writing of an indigenous, authentic history of Africa' (Spady 1986, 98). Diop argued that there was a close relationship between the two disciplines since it was 'the same person giving different images.' But these images were not completely separate and brought into life, and into the arena of the humanities and social sciences, the observations of quantum physicists such as Niels Bohr. In 1927, Bohr introduced the notion of complementarity as a principle arising from quantum mechanics and physics. This principle implies the existence of continuous interconnections between phenomena (Capra 1982, 69-75).

In his article on Diop's work, 'The scientific spirit,' Spady (1986, 98) draws an analogy between Diop's work and quantum mechanics 'where you have a particle that can be either a wave or a particle.' This was not simply a theoretical reflection on the manner in which this notion of interconnections related to Diop's scientific research and the results that Diop reached; it went beyond these manifestations and provided room for value statements about African culture. This is true because all human physical conceptions are simultaneously conceptions of the mind which sustain all systems of knowledge. Thus, for the first time, the deep Cartesian divide between mind and body was removed by way of combined thinking and reflection (1986, 72). Spady noted that in using this approach for his book *Precolonial Black Africa* (1974), Diop had 'made the quantum leap from a chronos time concept of history to a Sasa or UMUM time philosophical concept of history.' In so doing, he added, 'Diop had demonstrated how one can write a history of Africa without being locked into . . . a mere chronology of events' (Spady 1986, 98-99). As we saw, Diop maintained that through the historical

principle as the motor of history, it was possible to make ‘what happened 10 minutes ago or 10,000 years ago to occupy the same space in consciousness.’ This was clearly a quantum leap that went beyond existing epistemology in all its manifestations. This is why Diop was forced to pursue all lines of enquiry to find this new (transdisciplinary) path to knowledge production. Diop himself explains:

What I mean is that so many disciplines had to be mastered that no one person could possibly hope to succeed on his own. For instance, I had started attacking the problem of ancient Egypt and its relationship to the rest of Africa via linguistics and history. But it was soon apparent that I would have to master various other fields, such as ethnology, anthropology and so on. Consequently, I was led to tackle biochemistry, physics, mathematics, philosophy, etc. I also had to learn the ancient Egyptian language to communicate with them without intermediaries, such as translators. So you can see what I mean. We must stop being dilettantes, dabbling here and there, and become well-trained, pluridisciplinary specialists! We need a new division of labour among our researchers. Those who may be able to master several disciplines at a time must at least master one of them -- but completely. That is the least we can expect from serious scientific researchers today. Scientific cadres of the black world must cultivate competence (Moore 1986, 239).

In fact, Cheikh Anta Diop raised the matter of quantum theory and how it related to the issue at hand in his book *Civilisation or barbarism* (1981). He pointed out that ‘scholarly antiquity only knew the logic of the excluded third, formal logic, for that is all that was permitted by the scientific level of the time’ (Diop 1981, 363). But with the development of quantum physics, we had reached a stage where we could profoundly modify our ‘thinking habits, a real opening toward an infinite development of our mental structures, our logic, our reason’ (1981, 363–365).

Beyond transdisciplinarity to a philosophy of the future

Diop was ahead of his time in scientific endeavours, grappling with the issue of the ‘excluded third’, which latter-day transdisciplinary theoreticians were at pains to ‘include’ as we saw above. In trying to undertake this task, Diop summarised the experience of modern physics from Aristotle to the point when a new critical reflection was reached. This critical reflection, based on the discoveries of quantum physics, called into existence ‘a new logico-mathematical formalism that will raise, for the first time in the history of the sciences, “doubt,” “uncertainty” at the level of logical value’ (Diop 1981, 363). Diop noted that scholarly antiquity could not have raised doubt and uncertainty ‘to the level of a logical value, in order to create a trivalent logic’ that was essential for the progress of physics (1981, 363).

‘One had to wait for the advent of quantum physics,’ Diop argued, ‘in order for mental habits to arduously but assuredly change.’ As Engel noted in his *Dialectics of nature* (1883), ‘it was always nature that corrects the spirit and never the other way around.’ This discovery led Diop to the conclusion that in the process of knowledge

production, perfecting the instrument of logic used for the acquisition and widening of knowledge was infinite (Diop 1981, 363). It became apparent that these new openings made it possible to modify our thinking habits and move towards an infinite development of our mental structures, including our logic and our reasoning.

For Diop, quantum physics therefore made it possible to do away with the notion of ‘ultra-vacuum’ (empty space and the void): ‘Matter is present at different levels everywhere in the universe: an absolute vacuum does not exist’ (1981, 365). On the basis of this synthesis, Diop prophesied that ‘perhaps humanity will one day solve the fundamental problem of philosophy, that of being (why being rather than nothing?), a question posed by Heidegger throughout his life and also by Sartre after him’ (1981, 365). He observed that ‘in the context of the general evolution of thought, Black Africa (had) stated the thesis, idealism (in the general sense), Greece, the antithesis, materialism, and the elements of a synthesis and beyond are only beginning to show up a scientific horizon’ (1981, 366).

In this discourse, Diop delved deep into the debates about quantum physics, quantum mechanics and Albert Einstein’s attempt to ‘absolutely prove quantum physics wrong.’ Einstein did not want the three principles enunciated by classical physics, determinism, objectivity and completeness, to be abolished. A joint article authored by Einstein, Boris Podolsky and Nathan Rosen (Einstein et al, 1935) raised what Einstein called the ‘EPR Paradox’ — a thought experiment which challenged long-held ideas about the relationship between the observed values of physical quantities and the values that can be accounted for by a physical theory. Einstein, Podolsky and Rosen (1935) argued that quantum mechanics was not a complete physical theory. This debate informed most of Diop’s discussion of how the development of microphysics contributed ‘powerfully to the advent of the crisis of reasons.’ On the basis of the new principles, quantum mechanics was ‘on the verge of negating the local physical causality of classical physics in order to admit the possibility of instantaneous interactions on the scale of the dimensions of the universe.’ The same principle, Diop continued, ‘allows us the most advanced research of our time to contemplate going back into the past with a signal, and then changing the direction towards the future’ (1981, 370).

Thus, modern physics has created the right situation to teach us that classical logic is nothing but the sum total of mental habits, of provisional rules that can change when sovereign experience requires it. Reason lapses, but it does not get caught in a vicious circle; it progresses, it is accomplishing under our eyes the most formidable qualitative leap that it has ever made since the origin of the exact sciences. The reasoning reason, supported by the experience of microphysics and astrophysics, is going to give birth to a super-logic that will no longer be hampered by the archaeological materials of thought, inherited from the previous phases of the evolution of the scientific mind.

Diop proposed that in order to overcome this ‘crisis of reason’ and embark on a new logic built on the basis of modern physics as manifested in microphysics and

astrophysics, ‘a new philosophical concept has to be forged.’ He called this concept ‘logical availability’ of the mind:

Tomorrow, sovereign experience will be able to transform into rational fact what seems to us logically absurd or impossible today. The absolute absurd no longer exists with regard to reason. In fact, it is remarkable that the sense of logic is in hold today, and that it awaits the verdict from the laboratory experiments in progress, before it either maintains or rejects the fundamental logical category, that is, the causality of classical physics: this is a remarkable corroboration of Engel’s thought, according to which *it is nature that corrects the mind and not the reverse*. And we can add that such a perfecting of the process of reason is infinite. It is the “real” that helps the mind to refine its rationality. Hence, the rationality of the “real” is based on facts and ceases to be inconceivable, and this no matter what the given to the notion of reality by quantum mechanics (emphasis original) Diop 1981, 371).

It is the decisive result of experience that constitutes the ‘new scientific spirit, arrived at only with the help of the progress made in quantum physics, that merits special designation of a nature that will put its novelty in the limelight’ and it is this ‘novelty’ that made it possible for Diop to craft the philosophical concept of ‘logical availability’ (1981, 371).

For Diop, the philosophical concept of ‘logical availability’ was the result of a quantum leap that had taken place, particularly in the field of physics, but impacting on the way we think and construct knowledge through logical method ‘before being replaced by a new integrating theory on a still broader basis.’ Scientific spirit therefore encompassed the whole field of knowledge production in the exact sciences, social sciences and the humanities as well as in the spiritual world. This notion of ‘logical availability’ also reversed an understanding of science, culture and spirituality as belonging to different worlds of knowledge – one concerned with the study of the universe (where do we come from?), the other concerned with culture (who are we?), and yet another concerned with theology or religion (what is the meaning of our lives?) The philosophy of ‘logical availability’ implies an openness of mind to the ‘real’ (‘sovereign experience’), which includes the spiritual. Diop concluded that this implied that classical philosophy ‘as promoted by men of letters, is dead’ (1981, 375):

A new philosophy will rise from these ashes only if the modern scientist, whether a physicist, a mathematician, a biologist, or anything else, ascribes to a ‘new philosophy’: in the history of thought, the scientist up to now has almost always had the status of a brute, of a technician, unable to extract the philosophical importance from his discoveries and his inventions, while this noble task always fell to the classical philosopher.

But since classical philosophy as promoted by these philosophers was dead, it followed that the new philosophers armed with the concept of ‘logical probability’ would have to constitute a new integrated philosophy that would overcome the separation of the scientist from the philosopher and hence the social scientist and the theologian:

Philosophy's present misery corresponds to the time interval that separates the death of the classical philosopher and the birth of the new philosopher; the latter undoubtedly will integrate in his thought all of the above-signalled premises, which barely point to the scientific horizon, in order to help reconcile man with himself (Diop 1981, 375).

This is indeed a quantum leap that makes the emergence of a new body of African humanities, social, physical and natural sciences possible, based on ethical foundations of the behaviour of man in nature. It must be, as Diop wrote, 'a new ethics that largely takes into account objective knowledge ... and, in short, the interests of the human species' (1981, 375). This development will contribute to the progress of humanity's moral conscience: 'slowly but surely, after all the crimes committed in the past, and that is an opening toward others and a powerful element of hope foreseeing tomorrow the blooming of an era of genuine humanity, a new perception of humanity without ethnic coordinates' (1981, 375–376).

Thus we come full circle: from Diop's observations on the centrality of race/ethnicity as the basis in terms of which modern society defines discriminatory social and economic relationships, exploitation and domination of the 'inferior other', to the articulation of the two (or two and a half) cradles/zones into which humanity was organised culturally and spiritually. The two cradles, as we have seen, are in fact not irreducible but interrelated through cultural interaction so that even here there is no 'void' or 'excluded middle.' There are interconnections everywhere because the universe is a single entity. Diop's rejection of the evolutionist theories which generalised human experiences – without showing points of diversity and interconnection – postulated yet another mythology of classical thought based on the idea of a unilinear progressivism without recognition of the diversities that formed the universe. These diversities can only be reconciled through a philosophy of ubuntu and ma'at which believe in the interconnectedness of all human beings – Diop's philosophy. Diop saw the beginning of this humanistic ethic against domination as having emerged with an international opinion against genocide which had brought about a 'modification of the behaviour of the capitalist universe against the weak.' This humanistic phenomenon was now irreversible. He added: 'the result is a forced progress of the world's ethical conscious.' He referred to the quasi-official Ku Klux Klan killings and lynching in the United States and noted that the change against them came spontaneously: 'It was the appearance of an adversary of their own calibre that imposed on them the revision of their behaviour, and so much better if social and moral progress comes out on top.' (This reference was to the young American, Slain, who drove his car into a meeting of the wizards of the Ku Klux Klan and by so doing 'performed an important civilising act, a peacemaking, non-violent act' against the killers (Diop 1981, 376).

Conclusion

Professor Cheikh Anta Diop's work has contributed greatly to the pride of black peoples of the world who have long been subjected to discrimination, exploitation and domination by anti-humanistic ideologies. His commitment to a scientific spirit compelled him to discover and reveal the truth about Africa's past. Diop's discovery of a new philosophy of 'logical availability' opened the possibility of an open-ended science which could accommodate all voices. It is this new philosophy that can be relied upon to handle the latest developments in human existence and end genocide.

According to Goldberg (1993, 71) the concept 'race' has now taken on a cultural form. This cultural conception of race has come to include the identification of a race in terms of language group, religion, group habits, norms, customs, styles of behaviour, dress, cuisine, music, literature and art:

At bottom is identification with the norms and values of the group. This is not new but expresses a continuing crisis, which seeks to locate race in some kind of receptacle. Identification of certain racial groups with language goes back to the nineteenth century when an attempt was made to link Indian Sanskrit with the European languages as a mark of superiority of the 'Aryan' race. But, according to Goldberg, this persistence has resulted in the cultural conception of race eclipsing all the other conceptions, including the biological one. This, he says, has taken place since the end of World War II and has become paradigmatic in itself (Nabudere 2001, 14).

Thus, it is only by moving toward a new emancipatory ethic that we can liberate humanity from ill-founded prejudices. It is through a consistent struggle against false 'sciences' and towards the new science arising out of the 'sovereign experience' of our common existence as human beings that we can end all discrimination, exploitation and oppression based on race, ethnicity and gender. To quote Carruthers (1999, 3):

This should be a constant reminder that the military victory against biological genocide must be consummated by a final triumph over the cultural tyranny that has been imposed on the life and history of African peoples.

The author concurs and would add that it is to Diop that humanity owes this conclusion for his thorough scientific investigation of the falsifications about race – falsifications that have led humanity to self-destruction and genocide. Diop's contribution is perhaps the only one that can enable us to rid humanity of the hideous character of racism that is deeply built into the Western psyche against black people in general and against Africans in particular. It is this continuing reinvention of the concept of race that proves Cheikh Anta Diop's point not to obscure the concept by ignoring its significance. With conditions for genocidal violence increasing in communities throughout the world, it is critically important for African scholars in particular to excavate and exhume racist scholarship for deep critique. It is only through this scientific approach to understanding racism that a culture of tolerance,

as that advocated by Diop, can be grounded in the human relations of the twenty-first century and beyond.

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