NEOGEOGRAPHY AND THE PALIMPSESTS OF PLACE: WEB 2.0 AND THE CONSTRUCTION OF A VIRTUAL EARTH

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ABSTRACT

Places have always been palimpsests. The contemporary is constantly being constructed upon the foundations of the old. Yet only recently has place begun to take on an entirely new dimension. Millions of places are being represented in cyberspace by a labour force of hundreds of thousands of writers, cartographers and artists. This paper traces the history and geography of virtual places. The virtual Earth is not a simple mirror of its physical counterpart, but is instead characterised by both black holes of information and hubs of rich description and detail. The tens of millions of places represented virtually are part of a worldwide engineering project that is unprecedented in scale or scope and made possible by contemporary Web 2.0 technologies. The virtual Earth that has been constructed is more than just a collection of digital maps, images and articles that have been uploaded into Web 2.0 cyberspaces; it is instead a fluid and malleable alternate dimension that both influences and is influenced by the physical world.

Key words: Cyberspace, information and communication technologies (ICTs), Internet, neogeography, virtual Earths, Web 2.0

> The ancients built Valdrada on the shores of a lake, with houses all verandas one above the other, and high streets whose railed parapets look out over the water. Thus the traveler, arriving, sees two cities: one erect above the lake, and the other reflected, upside down. Nothing exists or happens in the one Valdrada that the other Valdrada does not repeat, because the city was so constructed that its every point would be reflected in its mirror . . .
>
> At times the mirror increases a thing's value, at times denies it. Not everything that seems valuable above the mirror maintains its force when mirrored. The twin cities are not equal, because nothing that exists or happens in Valdrada is symmetrical: every face and gesture is answered, from the mirror, by a face and gesture inverted, point by point (Calvino 1974, p. 53).

INTRODUCTION

All places are palimpsests. Among other things, places are layers of brick, steel, concrete, memory, history, and legend (Whittlesey 1929; Donald 1997). The countless layers of any place come together in specific times and spaces and have bearing on the cultural, economic, and political characteristics, interpretations, and meanings of place (Crang 1996; Schein 1997; Cosgrove 1998; Duncan & Duncan 2003; Samuelson 2008).

The term palimpsest was originally used to refer to medieval writing blocks that could be reused while still retaining traces of earlier inscriptions (Crang 1998). More recently the word has been used by authors, artists, poets, photographers and geographers to describe the multitude of present and past discursive and physical layers that are used by people to

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interpret place (c.f. Sizemore 1984; Bradshaw & Williams 1999; Huk 2000; Basu 2002; Marsh 2003; Mohr 2003; Lutz 2004; Alexander 2007; Mitin 2007).

Yet, as many commentators have noted, places are increasingly shaped and defined by factors that are not only distant in time, but also in space. Advances in information and communication technologies (ICTs) and transportation technologies have intensified the ability of non-proximate forces to have bearing on the here and now of any given space/time moment (c.f. Adams 1995; Kitchin 1998; Dodge & Kitchin 2001; Brunn *et al.* 2004; Massey 2005; Graham 2008).

With the advent of the Internet, an entirely new dimension of layers has begun to be added to the palimpsest of place (Thrift & French 2002; Dodge & Kitchin 2004, 2005; Graham 2005; Zook & Graham 2007b, c). The virtual Earth and digital places are being constructed at a blistering pace in cyberspace. These cyberplaces are not simple floating and static mirrors of the physical world. They are instead often a component of the palimpsest of place. The virtual Earth and digital representations of place are often characterised by a reflexive relationship with their physical counterparts: they are shaped by, and, in turn, shape the physical world (Zook & Graham 2007a).

This paper has two aims. First, it makes the case that the construction of a virtual dimension to our planet is an unprecedented feat of engineering. Hundreds of thousands of writers, cartographers, designers, technicians, engineers, photographers and artists have contributed their labour to creating digital representations of the physical world. The paper traces the brief history of this virtual dimension, and employs the term 'neogeography' to understand the ways in which such an enormous labour force has been recruited. Second, the paper focuses on how representations of the virtual Earth have profound cultural, economic, and political consequences for the physical world and our interactions with it.

FROM CYBERSPACE TO NEOGEOGRAPHY

In the early days of the Web, cyberspace was the refuge of a small group of specialists (Abbate 2000). Creating online content was no easy task, and people generally needed some knowledge of a markup language (HTML) in order to upload information to the Internet. Cyberspace was conceived of as an ethereal, alternate dimension; a space in which geographic constraints could be transcended, and a virtual realm that would have little feedback on the physical world. Futuristic and fantastic predictions about cyberspace were constantly being made: it would allow new moments in human consciousness to be realised; it would create a global panopticon; would bring about world peace; and of course it would cause distance to die and spell the end of geography as we know it (Gillespie & Williams 1988; Cairncross 1997; Anderson 2005).

This is not to say the virtual representations of physical places were not being created. But, in contrast to current constructions of the virtual Earth, early attempts at digital representation of place were largely constructed under an entirely different paradigm.

Early geographic representations in cyberspace – People have always been possessed by a desire to represent our surrounding environment. Celestial maps dating back to 17500 BC have been found the walls of the Lascaux caves in France, and the first map of terrestrial area dates to 6500 BC (Geller 2007). As such, it is likely that Internet users uploaded some form of representation of the physical world into cyberspace not long after its invention. However, it is large, centralised organisations such as National Resources Canada and Xerox that took the lead in representing attributes of the physical world in cyberspace (Geller 2007). Mapping and the representation of the offline world did not really take off until 1996 when Mapquest and MultiMap (focusing respectively on the US and the UK) were launched. These websites both offered comprehensive databases covering large areas, address matching and routing services.

In the decade following the launches of Mapquest and MultiMap, the population of, and the content on, the Internet grew at an astonishing pace. In 1996, less than one per cent of the world's population (sixteen million people) had ever accessed a website; while the latest figures available (June 2008) indicate that

almost 1.5 billion people are now online (or 21.9% of the global population; Internet World Stats 2008). During this period, a host of services to deliver static and dynamically created maps on the Internet were launched, including: the US Online National Atlas, the UMN MapServer, Terraserver USA and NASA World Wind.

Most of these projects (the exceptions will be discussed later in this paper) operated under a similar paradigm for the distribution of information. Obtaining spatial data, and designing and distributing digital maps required large amounts of capital investment and technical knowledge, and was out of the reach of most Internet users. The serving of maps online thus, was characterised by a one-to-many[1] system of communications: with most Internet-users being consumers rather than producers of representations of place.

Web 2.0 – While the Internet has, in many ways, always been characterised by a many-to-many relationship, it is only recently that the distribution of the production of spatial data have followed the same paradigm. This move towards a more dispersed system of the production of geographic content occurred with a concomitant shift in the production of information on the Internet more generally. Prior to this shift, the two important features characterised the Internet.

First, much like traditional methods of representation (photography, video, print media, etc.) the content of information and text was almost always linked to its form. Early web pages constructed in HTML defined their own content and appearance: they were essentially tied to fixed locations in cyberspace. With the widespread adoption of extensible markup language (XML), cascading style sheets (CSS), and really simple syndication (RSS), form and content could be separated, thus allowing for automated data exchange.

XML is a standard which allows custom markup languages to be created. It was designed to describe data rather than display it (in other words, it deals with semantics instead of form). The markup language thus allows information to be clearly described so that it can be easily ported across systems and across the Web (Walsh 1998; Harold & Means 2004). An RSS feed is a common type of XML document. RSS files are stored on servers and periodically updated. The RSS feed can be subscribed to by entering the address of the RSS feed into a program (e.g. a browser, news ticker or mobile phone application) or another website. The program (or code embedded in other websites) then periodically checks the RSS file to see if it has changed. If any changes have been made, the latest information contained within the file is then displayed to the person viewing the RSS-enabled website or using the RSS-compatible program.

CSS, in contrast, is purely a style language that defines how information is presented on the Web (Briggs *et al.* 2004). By storing styling information in an external CSS file, markup files can focus solely on intention and meaning rather than form and layout. Thus, like XML, CSS also assists in the separation of form from content by allowing the independent styling of any markup (i.e. XML or semantic HTML).

The move away from a Web constructed upon HTML to a Web in which it is much easier to sever information from specific ties in cyberspace and port it around to any cyber-location has meant that content and information is now difficult to contain.

A second important feature of the Internet was that centralised repositories of information were not very effective. While a number of websites attempted to map out the structures of the Internet and organise its content, they were slow moving and omitted large amounts of cyberspace. With the explosion in the population of consumers and producers of information in cyberspace, demand grew for effective ways to manage and collate data. This demand, in part, gave rise to the frameworks for organising knowledge that will be discussed in the next section.

Both of these shifts made it possible for a large population of Internet users to move from being consumers to producers of information: a trend known as Web 2.0. The Internet was being used for more than reading newspapers or checking the weather. Users were social networking, selling second-hand products, uploading music and video, writing blogs, and creating content in countless other ways, while concomitantly tagging, categorising and

organising what had the potential to be highly scattered and disconnected information.

Neogeography – Neogeography is a term that refers to techniques, tools and practices of geography that have been traditionally beyond the scope of professional geographers and geographic information systems (GIS) practitioners (Turner 2006). Szott (2006) describes neogeography as:

> a diverse set of practices that operate outside, or alongside, or in the manner of, the practices of professional geographers. Rather than making claims on scientific standards, methodologies of neogeography tend toward the intuitive, expressive, personal, absurd, and/or artistic, but may just be idiosyncratic applications of 'real' geographic techniques. This is not to say that these practices are of no use to the cartographic/geographic sciences, but that they just usually don't conform to the protocols of professional practice.

A quote by the founder of one of the Internet's largest social mapping websites (Platial.com) neatly encapsulates some of the appeal of neogeography (Wilson 2007):

> We made them maps, like everyone does, of the basic neighborhood amenities. If our guests wanted to go do some errands, it's handy to have a map with more than just museums and shopping malls on it. There was the grocery store, the post office, the good bakery and the locals' lunch spot, plus the place to watch the barges come around the canal, the place where the blue heron hangs out on the parked cars and the place not to lock up the bikes . . . We ended up with a kitchen drawer stuffed full of these notes. It was our collection of Places, plus menus for take out, magazine articles listing kid-friendly museums, schedules of parades, and a few brochures and tour books for attractions that seemed interesting enough. A few maps got lost, loaned out, or recombined. Others got photocopied or emailed or taped to front doors as invitations.
>
> We wanted a way to preserve all that knowledge in a powerful, useful, contextual the potential for a broad, useful way for people to share contexts and meanings of Places.

The practice of neogeography has in many ways been made possible by the relative pervasiveness of hardware that allows the manipulation of spatial data. Personal computers have been affordable to portions of the world's population for decades and have now reached saturation levels in many countries (Economist 2009). Global positioning system (GPS) devices in particular have allowed all manner of spatial data to be created by non-professional geographers (Brunn *et al.* 2004; Dykes 2006). GPS technologies have encouraged personalised mapping and have transformed 'everyday movements into creative expressions' that can be uploaded and shared with the world (Parks 2001, p. 200). Furthermore, spatially aware technologies are not just confined to dedicated GPS devices connected to the Internet through PCs. Many mobile phones contain embedded GPS devices, while even those that do not can often make use of services such as Google Mobile Maps which uses the location of cell towers to triangulate the approximate location of a phone (Simon *et al.* 2007). With the widespread adoption of this appropriate technology, neogeography only needed a versatile technological framework in order to prosper online, and it was precisely the paradigm shift to Web 2.0 that allowed the production and representation of geography and the sense and spirit of places (or genius loci) to move into the hands of the masses on the Internet.

ENGINEERING A VIRTUAL GENIUS LOCI

Our geographic imaginations and the individualised sense of place (or genius loci) that we create is always constructed from a certain standpoint and location (Allen & Massey 1995). Humans have always seen the world from here rather than from there, and as a consequence our spatial imaginations have traditionally been grounded in the local rather than the global (Esteva & Prakash 2004; Allen & Massey 1995). By influencing our geographic imaginations, representations of place always both constitute and legitimate power relations (Rose 1994).

It is consequently important to consider how our view from here is no longer simply tied to physical proximity. The genius loci of many places (for those with online access), now potentially becomes shaped by both physical and virtual elements of the palimpsests of place. It should however be noted that the genius loci of a place is not meant to imply that there is an objectively identifiable spirit of any place. The term is instead employed to capture the individual, subjective understandings of any given place.

A range of services have been created to allow people to practice neogeography and represent the physical world virtually (c.f. Miller 2006; Crampton 2009). These representations together begin to form a virtual dimension to the world – or a virtual Earth (Gelernter 1993). As the remainder of this paper will demonstrate, the virtual Earth, while phrased as a singular dimension, is always experienced incongruously on an individual scale. The multiplicity of online georeferenced data is never static and cannot all be accessed in any one representation. The virtual Earth is therefore far from being a singular ontic entity. Yet, it remains that the idea becomes useful as a way to conceptualise the masses of non-physically proximate information that can influence the trajectories of any place.

Three forms of representation are identified and described below. However, it should be pointed out that not only are there are undoubtedly numerous other ways of representing the world online, but there is likely also significant overlap between the following three categories. Nonetheless, these three categories encapsulate a large proportion of the work that is currently being done by neogeographers.

Virtual globes – This category is perhaps more than any other characterised by its comprehensiveness. While Google Earth and Google Maps are the dominant collators of information, Yahoo! Maps, Microsoft Live Search Maps, Microsoft Virtual Earth, and others offer similar functionality and content. These services all use the Earth itself as an organising principle, and allow contributors to add almost any imaginable content as long as they attach it to somewhere on the globe (Jones 2007). In the words of the chief technical officer for Google Earth, his service 'inverts the roles of Web browser as application and map as content, resulting in an experience where the planet itself is the browser' (Jones 2007, p. 11).

Users of these services can then virtually touch down to any point on the globe and immerse themselves in local knowledge about that place. A virtual palimpsest of place is truly created. Photographs, descriptions, blogs, narratives, advice, reviews and stories are all tied to a specific place, and can be instantly accessed.[2] Users can also, in many ways, peer through the fog of time, because unlike in the physical realm, there are no restrictions to only gazing upon the 'here and now.' It is not uncommon to find geotagged historical images and descriptions of a place (see for example, Figure 1).

There are unfortunately no reliable statistics on how many people use and create content for these services. As of September, 2008, Google Earth alone has been downloaded 350 million times. There are over one million members of the Google Earth community (bbs.keyhole-.com), with almost 700,000 bookmarked placemarks listed on the Google Earth community page. These statistics greatly underestimate the amount of labour that has been contributed to these projects for a number of reasons. First, while there are 700,000 placemark files on the Google Earth community page, there are countless other accessible placemark files that have not been specifically uploaded to that site. Second, many (or most) of the placemark files contain more than one placemark. Some contain hundreds or thousands of instances of geotagged information. Finally, these statistics only encompass data that have been specifically created for use in Google Earth. As mentioned above, there are a number of other collators of spatial data that use the virtual Earth framework: all of which index user-created content from around the world. However, by any measure these undertakings have been enormous. Hundreds of thousands of people have contributed their labour to creating layers and content to the virtual globes that can be accessed from anywhere on the planet.

The wiki-locals – The most important websites in this category are Wikipedia, Wikitravel and

Figure 1. *Geotagged photograph of the Trinity College Dublin Quadrangle in 1898.*

WikiMapia.[3] Collations of spatial representation in this category differ from the virtual globes in two significant ways.

First, information can be scaled to any level. In virtual globes, every placemark has distinct co-ordinates on the Earth's surface. The wiki-locals in contrast allow locations at a much smaller scale (e.g. countries or continents) to be represented and described. Contributors can add information to existing scales (e.g. uploading a photograph to 'Manhattan') or are free to create new ones that might not already exist (e.g. specifically tagging a photograph to the West Village in Manhattan).

Second, the wiki-locals necessitate agreement. The virtual globes allow multiple placemarks to be located at the same co-ordinates. The wiki-locals in contrast encourage debate and argument about how a place should be represented, but ultimately allow only one representation to be displayed. However, it should be pointed out that debate and disagreement about place representation can still be easily accessed in all of the wiki-locals. Wikipedia, for example, has a 'discussion' page for every physical place that is represented, while WikiMapia allow comments to be added underneath any representation of place (see Figure 2).

The amount of labour contributed to engineering the wiki-locals is again enormous.[4] As of September 2008, Wikitravel had over 50,000 places represented, 950,000 page edits, and over 28,000 contributors. Wikipedia has vastly more pages and editors, but it is impossible to know what proportion of the site is dedicated to the representation of place (the website is a comprehensive encyclopaedia covering a range of topics). Wikipedia likely contains at least as many contributors and place representations as Wikitravel and probably many more (given the fact that Wikipedia is a more established website).[5] WikiMapia, has perhaps the largest number of places represented of any of the wiki-locals (six and a half million places as of January 2008). Finally, all of the statistics presented above only include English language comments. Counting wiki-local representations of place in other languages increases the total manyfold.

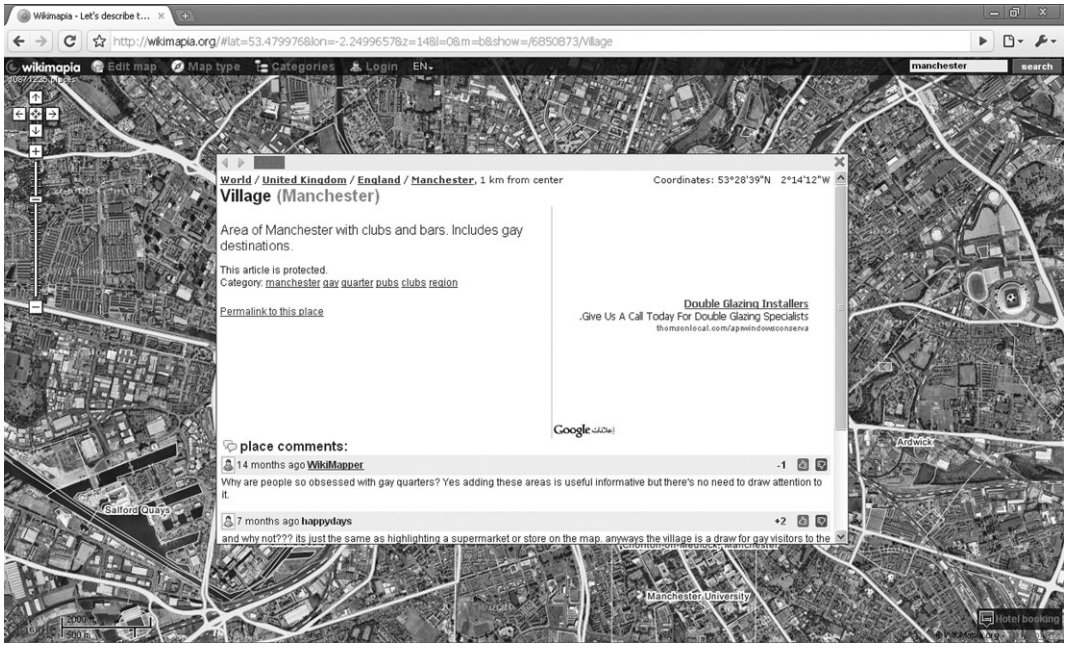

Figure 2. *The Village in Manchester.*

OpenStreetMap – Finally, there is the OpenStreetMap project. OpenStreetMap is in many ways similar to conventional maps and representations that can be found at Mapquest and MultiMap. The difference, however, is that instead of using government, or private data sources, the project relies on thousands of volunteers to trace features with portable GPS devices. Users can also edit and correct mapping performed by other volunteers, thus necessitating consensus (much like the wiki-local system).

Unlike virtual globes and wiki-locals, OpenStreetMap offers no scope for playful interpretations of place. The main objective of the project is instead to map out the Earth's physical features. By August 2008, there were 50,000 contributors and most major cities of the world (and indeed many small ones) have been thoroughly mapped entirely by volunteers (see Figure 3 for an example).

CREATING ORDER IN THE VIRTUAL DIMENSION

With such an enormous amount of geodata being mapped and distributed online, there is a clear need for ordering and categorisation schemes to allow people to access pertinent information. Myriad, dispersed representations of the physical world have always existed on the Internet, but were never organised in any meaningful fashion. Some web-portals such as AOL and Yahoo! attempted to construct detailed categorisation schemes and virtual cosmographies[6] (see Figure 4 for an example). But the effort required to comprehensively organise online spatial information was beyond even those large firms, and knowledge was often awkwardly sited in the classificatory system.

The virtual Earth is more than a static and floating mirror of the world we inhabit. Digital Places (or DigiPlaces) have instead become part of the palimpsest of place. The enormous, complex, and interlinked virtual dimension that has been engineered over the last decade has the power to influence economic, cultural and political processes in the offline world by shaping how place is perceived (or the genius loci of a place; Zook & Graham 2007a, c).

This final section of the paper, explores how the nature of reflexive links between the online and offline worlds matter. Even though the

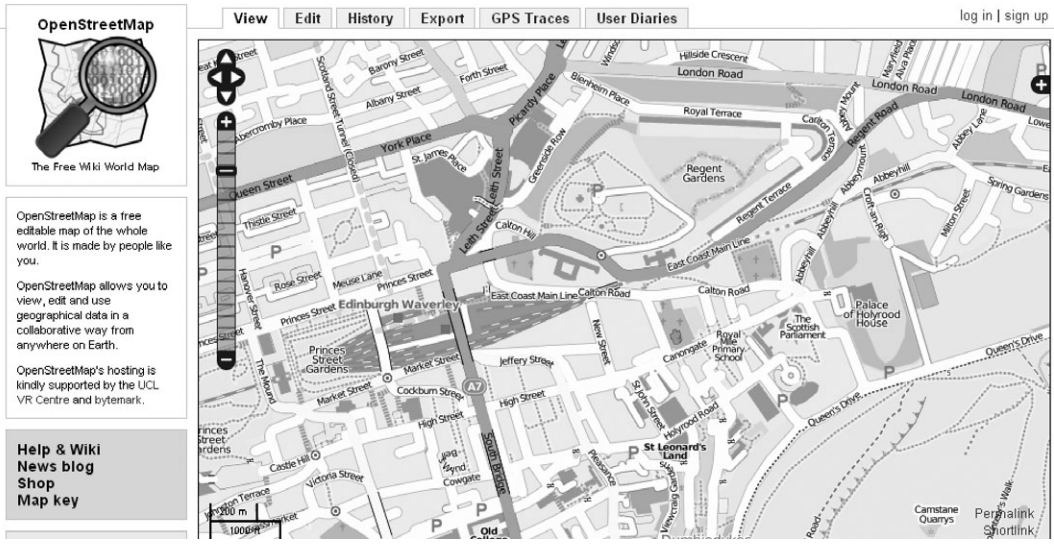

Figure 3. *OpenStreetMap of Edinburgh, UK.*

Figure 4. *A sub-section of the Yahoo! directory.*

virtual dimension contains representations of millions of places, two factors can make place invisible in cyberspace. First, some physical places occupy virtual black-holes in virtual globes, Wiki-locals and OpenStreetMap: that is, there is very little information about them in cyberspace. Second, in the case of virtual globes, an additional factor can influence presence and absence in cyberspace. The ordering of virtual places by millions of online volunteers is filtered through specific software algorithms, resulting in the prioritisation of some interpretations and representations over others.

Presence, absence and black holes – Just because hundreds of thousands of people are creating enormous amounts of online content about physical places does not mean that there is not a distinct geography to the production of this knowledge. A large body of literature has demonstrated that both the physical networks of, and the content on the Internet are characterised by highly uneven geographies (c.f. Castells 1996; Moss & Townsend 2000; Townsend 2001; Warf 2001; Wilson 2001; Castells 2002; Zook *et al.* 2004; Zook 2005; Crang *et al.* 2006; Recabarren *et al.* 2008; Rye 2008). It is therefore, perhaps unsurprising that even a cursory look at any of the websites dedicated to neogeography reveals places that have not been represented in much detail.

Some places are likely underrepresented because of technological, economic, and educational barriers faced by people with indepth knowledge about those places. To use North Korea as an example (because it is has one of the lowest levels of Internet access in the

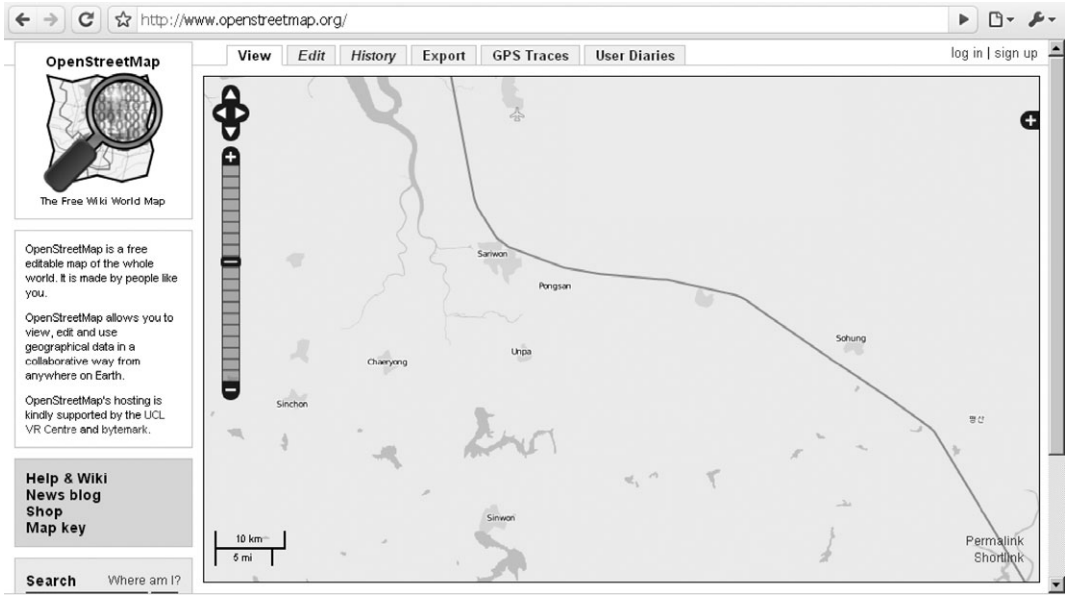

Figure 5. *An OpenStreetMap of South-western North Korea.*

world), we can see that only a few details have been added to even a small-scale map of the country on OpenStreetMap (see Figure 5). Most regions of the country are similarly lacking description in the wiki-locals. North Korea is far from the only place occupying a virtual black hole. Places and regions such as Saharan Africa, Northeastern Thailand and Bihar state in India all have relatively low information densities.

A lack of available information is often also related to language barriers. Online representations of place exist in a broad-range of human languages. The Wikipedia entry for the United States,[7] for example, is written in 190 different languages). Most places, however, are represented in only one or a handful of languages. A place therefore essentially has no cyberpresence if it is represented in a language not spoken by an Internet user. An example can be seen by looking at the English and French Wikitravel entries for Corte, France (see Figure 6). The French guide contains a variety of information on the town of 6,000 people. The English guide in contrast, contains no information whatsoever about the town.

Finally, an important feature of the neogeography that is occurring online is that volunteers are not only investing their labour into creating content, but they are also playing a large role in editing, ordering and categorising that content. The wiki-locals offer very few organisational guidelines, and move beyond structured cosmologies. Organisational spatial hierarchies are instead entrusted to the community of users. So, for example, the Bangkok guide in Wikitravel is organised into six main districts, while the Dublin guide discusses the entire city as one entity. Because OpenStreeMap and Wiki-local contributions are never considered finished, and because editors are able to add and remove content at will, entries are frequently removed by majority votes if they are deemed to be 'false' or 'spam'. This also means that dominant societal narratives necessarily play a large part in determining what is considered acceptable content.[8]

Visibility through software sorting – In places that contain rich layers of information, there are powerful factors that allow some information to remain visible while other content stays hidden. Massive amounts of data and description about any given place necessitate the ordering systems discussed earlier in this paper. Ranking systems inherent to geo-search

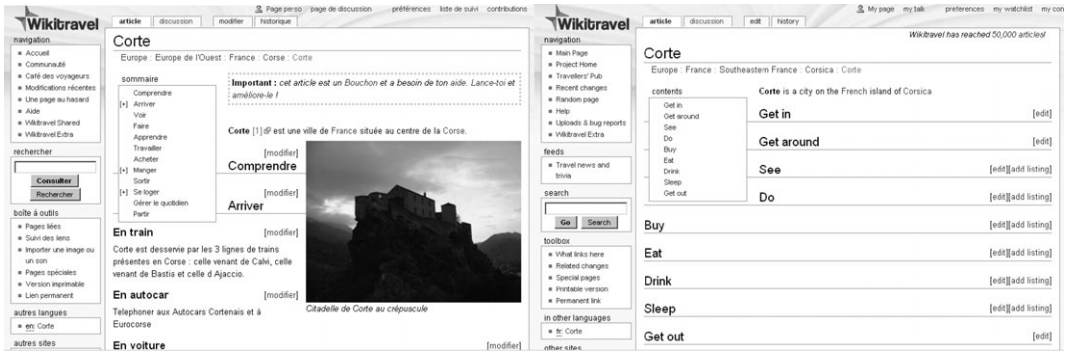

Figure 6. *The French (left) and English (right) versions of the Wikitravel entry for Corte, France.*

engines like Google Maps factor not only distance but also PageRank into their results. As a consequence, online content (i.e. virtual representations of physical place) becomes more visible if it has a high level of online popularity (as measured by hyperlinks).

The virtual globes (or specifically Google Earth and Google Maps) create order by relying on linkages that people form between ideas elsewhere in cyberspace. This system (dubbed PageRank by Google) assigns a high level of importance to information that is linked to by a large number of websites. Links from websites that already have high ranks are assigned a higher weight than links from websites with lower weights. This fact becomes important when geodata are displayed in map form, because information with high PageRank scores is given visual priority over information with low PageRank scores.

PageRank harnesses the work that has been put into millions of websites in order to create a specific form of order to online representations of place. This system therefore is not designed to create structure, but rather exists to order the many structures that already exist throughout cyberspace. Indeed, it is the order that has been given to representatons of place in virtual globes, wiki-locals, and the OpenStreetMap system that make the three systems of representing place so powerful and widely-used. The ordering principles (i.e. PageRank and dominant voices in the wiki-locals) to the structurings and rankings of representations of place are by no means objective and benign; however, it remains that both the production and the ordering of virtual representations of place are created in a highly dispersed and decentralised manner.

An example of ways that relevance is structured by more than distance can be seen in Figure 7. A search was conducted for 'football' near the town of Stretford in Greater Manchester (Stretford can be found in the lower-left hand side of Figure 7). Instead of prioritising relevant locations that are close to Stretford, the ranking algorithm prioritises the Manchester United Football Club (one of the largest sports teams in the world) that is two miles to the north of the town (location 'A' in Figure 7) instead of the much closer Sale Sports Club (which is demoted to the second page of results).

While the above examples may appear trivial, they provide a starting point for thinking about some of the ways that the virtual dimension of place is not only based on, but can also actively shape its physical counterpart. Presence and visibility in cyberspace undoubtedly have effects on cultural, economic and political processes: indeed, in 2007, almost seven billion dollars was spent by individuals, groups and firms to gain prominence in online ranking systems (through either advertising or search engine optimisation techniques).[9] The enormous amount of money spent in one year on improving cyber-visibility in many ways illustrates the importance of online representations of the physical world. Online representations have thus become another layer in the palimpsest of place.

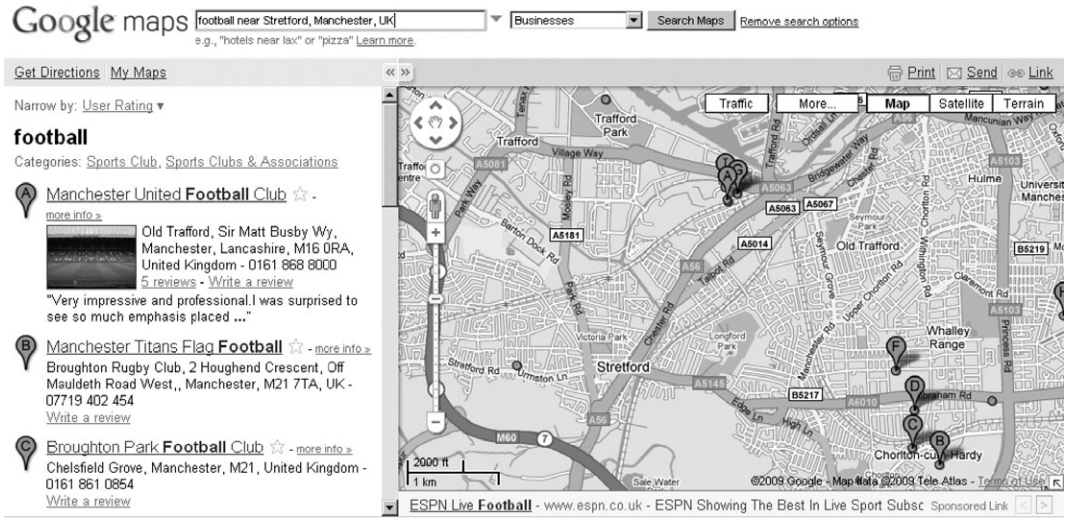

Figure 7. *A Google Maps search for 'football' near Stretford, Greater Manchester.*

CONCLUSIONS

The construction of a virtual dimension to physical place is a feat of engineering that is unprecedented in human history. Web 2.0 has allowed hundreds of thousands of people to work on constructing virtual representations of place. The ability to separate form from content has meant that representations can be collated into a few online virtual globes through automated data exchanges, mashing and integration. The virtual dimension to the world is enormous in scale and scope, and for the most part has been constructed in less than a decade. Furthermore, neogeographers are not only creating content, but are also ordering and structuring this new virtual dimension.

The potential benefits of the virtual Earth and neogeography have been widely touted. Mass collaboration and public participation in defining and re-creating layers of place in many ways democratises lived geographies (Sieber 2006). Some commentators ask whether neogeography and the virtual Earth will ultimately 'narrow the digital divide and produce digital dividends for all?' (Sui 2008, p. 4). Although, perhaps the clearest benefit to neogeography is the decreased reliance on centralised sources of knowledge to obtain information about place. This point is especially poignant for spatial information that is highly restricted by large government mapping agencies (e.g. the Ordinance Survey in the United Kingdom) (Goodchild *et al.* 2007).

This movement of power from professionals to Web 2.0 agents seemingly follows the post-modern epistemological shift of geographic knowledge away from the centralisation of late renaissance and early enlightenment cosmographers (Cosgrove 1999). Until relatively recently, geography was represented in pre-determined ways, and the rules of the ordering were systematically established by a few Western scientists. This system, thus created 'universal truths' and a 'planetary consciousness' (Pratt 1992). But with the recent surge in the practice of neogeography, knowledge on the Internet is in theory freed from the universal truths and planetary consciousness which suppressed dissent in earlier times (Emberley 1988; Poster 1995; Thu Nguyen & Alexander 1996; Warf & Grimes 1997). Although myriad representations and interpretations of place are now easily accessible, it remains important to note that the virtual Earth remains highly shaped by dominant power structures, software algorithms and the cultural links between producers of information.

Finally, even though neogeography and the virtual representation of physical places is now

practiced by hundreds of thousands, or even millions, of people around the world, a vast majority of the Earth's population remain excluded from these practices. The enormous virtual dimension to place has been created by specific demographic segments, and as a consequence many opinions and viewpoints have likely been left unsaid, just as many places remain virtually hidden and invisible.

The virtual Earth is not an alternate, disconnected dimension, but rather has spatialities that are always grounded in people's interpretations of place. Ranking and ordering systems likewise are based in the ways that the creators of the virtual dimension assign importance to place in the physical world (albeit often filtered through opaque, corporate ranking algorithms). Presences and absences, and well as the specific ways in which place is represented all have the potential to profoundly affect offline cultural, economic and political relationships. A place absent from the virtual dimension can face a number of consequences (which have the potential to be both negative and positive) such as: decreased levels of economic interaction with other people and places, lower levels of tourism, and fewer cultural exchanges.

Irrespective of its beneficial or harmful consequences, the virtual Earth is more than a fad or a passing trend. It has become a permanent and important feature of contemporary society. The massive amount of virtual representations of place that have been constructed are not isolated and disconnected depictions and descriptions, but rather come together in the virtual Earth to form an alternate, virtual-dimension to place. This dimension exists in a symbiotic, reflexive relationship to the physical world, which by becoming a new layer in the palimpsests of place ultimately can shape our genius loci and change the very natures of place.

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Notes

1. The terms 'one-to-one', 'one-to-many', and 'many-to-many' are widely used in the field of communications studies. 'One-to-one' refers to the act of one person communicating with another (e.g. by email). 'One-to-many' communications indicates a flow of information from one producer or distributor to a much larger audience (e.g. radio or television). 'Many-to-many' communication occurs when there are a large number of producers and consumers of knowledge and information (e.g. a chatroom).
2. It would have been possible to create a fourth category of virtual representations of the non-virtual called 'local forums'. This category would have included websites on which users contribute their local knowledge and expertise, images, sounds and videos. Examples include: Tripadvisor, Thorntree, Flyertalk, Travelbuddy, and countless other websites. Such sites have not been assigned into their own category because they do not represent any sort of centralised hub of information: they are instead scattered throughout cyberspace lacking clear linkages to one another. However, virtual Earths incorporate the data from many of those sites into layers that can be accessed from within the virtual Earth, thus employing a core web 2.0 feature.
3. It could be argued that WikiMapia is also a virtual globe. However, it is included in the Wiki-local category because it has closer similarity to other wiki-websites (in terms of both scale, and the need for agreement).
4. The following data were all taken from the 'statistics' section of each website on 5 September 2008.
5. For the purposes of comparison: the English language Wikipedia contains over two and a half million articles created by over seven and a half million contributors.
6. The word 'cosmography' here is a reference to eighteenth century attempts by biologists to construct a planetary consciousness (Pratt 1992).
7. <http://wikipedia.org/wiki/United_States>.
8. For example, in most cities, a brothel is less likely to be described in a Wiki-local than a history museum.
9. Cyber-visibility is now recognised as being crucial to the delivery of not only commercial, but also political and cultural messages. For instance, the 2008 presidential campaign of Barack Obama spent three and a half million dollars on online advertising.

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