**Surveying New Sites: Landscapes and Archaeologies of the Internet**

This study examines how an archaeological approach can be applied to the analysis of online spaces and websites as a mode of critical inquiry. With a nascent “digital archaeology”, which has emerged within media studies, the role of archaeology can be regarded as being reduced to a convenient metaphor in these discussions as scholars seek to “unearth” and “excavate” connections between technology and society. To counter such limiting and one-dimensional assessments of the discipline, this research highlights how archaeology as a study concerned with space, place and materiality can be mobilised to investigate the digital realm. Therefore, using theories derived from critical code studies, this article highlights the potential of an archaeological survey of the internet by examining the site of Stonehenge within the online landscape.

Keywords: Critical code studies, digital archaeology, HTML, Stonehenge

Whilst archaeology has been revolutionized by computational applications, the development of digital technology and the growth of the internet, the contribution of the discipline to the study of this new media have been largely explored from beyond the subject area (see Huhtamo 2011). A distinct area of enquiry termed “media archaeologies” has emerged within communication and cultural studies (see Parikka 2007; 2012). Media archaeology has taken as its core concerns the material and immaterial relationships between society, technology and the media (Elsaesser 2004). Drawing upon Foucault’s (1977) “archaeology of knowledge”, the metaphor of excavation has featured prominently as a guiding intellectual principle to describe how these analysts uncover the layers of accumulated media and technological practices (Ernst 2005). The actual engagement of disciplinary archaeology within this movement has been reduced to a series of convenient illustrations for practice rather than constituting a practice of examination in itself. However, a subject concerned with process, stratigraphy and change across time and space, should not be not demoted through its concern with the material world (after Graves Brown 2009; Harrison 2009; 2010). Rather, it constitutes a highly significant means of understanding the place and function of digital technologies (after Harrison 2011). This contribution of archaeology to the realm of this new media environment can be demonstrated in the application of another mode of study which analyzes the interface between human/technological interactions: critical code studies (Marino 2006; Wardrip–Fruin 2009).

**<1>Media archaeologies and archaeologies of the media**

The development of “critical code studies” stems from a concern within the humanities that the assessment of digital or computational models was based upon a premise that the medium was entirely objective (Kittler 1995). The use of programming and coding languages such as HTML, Java, JavaScript, C, C++ and PHP had appeared to be so prevalent in structuring and supporting the digital world that a critical engagement with these areas was largely absent (see Ridolfo and Hart-Davidson 2015; Sample and Vee 2012). The development of critical code studies emerged from a recognition that these tools can be examined on the basis of how they interact with and frame knowledge and experience within society (Marino 2006). Indeed, one may now speak of the “hermeneutics” of computer languages, as analysts have described the metaphors, relationships and allusions present within computer codes (Fuller 2008). Critical code studies also bears similarities with the studies from literary scholars during the early 1990s who applied post-structuralist theories to the study of the internet (Landow 1992; Poster 1990; Ulmer 1994). These studies drew attention to how elements of the internet’s structure, especially hyperlinks, operated in close association with theories of the structure of language (Bolter 2001; Mehler 2006). Therefore, the approach of critical code studies, which encompasses a variety of methods from the social sciences and humanities, is founded upon the application of a hermeneutical understanding of the codes and commands that facilitate the new media environment (after Latour 1996, 217).

For archaeology, this area of research reveals how an approach concerned with the arrangement of material in space and time can serve as a critical mode of inquiry to assess the digital landscape. As a distinct subject, archaeology from its emergence as a modern discipline has been focused upon the retrieval of past contexts to understand the formation of sites (see Thomas 2004). Rather than merely serving as a metaphor, this specific type of enquiry can be applied to examine the use and function of coding and programming languages. An archaeological process can reveal the layers through which information has accumulated and has been disseminated. Code offers an important arena for the archaeologist, with its own particular objects and structures, its emphasis on layering and chronology, the circulation of types and forms, the forming and shaping of societies and the interdependency of actors, objects and agency. Code offers a new site for archaeological fieldwork.

The tools for the digital archaeologist operate on the same premise as they do for the archaeologist in the field; to reveal and to understand past and present formation processes. For the digital archaeologist this can be undertaken by analyzing the source codes for the website. In most browsers, such as Internet Explorer, Chrome, Safari and Firefox, the HTML source codes can be accessed by selecting F12, “View/Source” or “View/Page Source” on the toolbar. Examining these codes reveals the particular characteristics of the website. For example, a common opening on a website is the following code:

<!DOCTYPE HTML PUBLIC “-//W3C//DTD HTML 4.01//EN”  
“http://www.w3.org/TR/html4/strict.dtd”>

This code indicates to the browser that the webpage is written in HTML 4.01, a version of the markup language that was first published in 1999. Subsequent developments have sought to standardise and improve HTML, with programmatic languages such as XHTML, PHP or Javascript contributing to the advancement of dynamic, interactive websites. An important part of this process was the use of Cascading Style Sheets (CSS) which have websites, as information on presentation is ‘cascaded’ through a website from external files. Therefore, if the coding of websites reveals the processes by which these sites have been constructed, then by exposing these codes the digital archaeologists can then begin to excavate the formation of online sites and landscapes.

**<1>Excavating the site of Stonehenge**

To demonstrate the potential of this approach the presence of the physical site of Stonehenge within the digital landscape can be studied. Applying a survey of the spaces, places and objects of this online environment reveals a considerable presence across the most popular search engines; in January 2015, over 16 million results were listed for “stonehenge” on Google and over 2 million results listed on Yahoo! and Microsoft’s Bing. The application of an archaeological technique can begin with this initial result as the search engines themselves reveal how sites are prominent in this landscape. The source code for Google’s results page has the line of code, “<http://schema.org/SearchResultsPage>”. This reference to “schema.org” indicates the presence of a shared system of extracting data from websites which is used by all major search engines and was developed in tandem by Google, Microsoft and Yahoo! (Schema.org 2015). This technique works by the use of markup data on webpages which details the information on those sites for the search engines. Website developers can use these terms to ensure their site is optimised for prominent placing in the results of searches. A presence within the digital landscape is enabled through the formation of specific structures in the coding and markup language of particular sites. The markup elements and tags involved in this process identify value, significance and notable features:

* Itemscope
* Itemtype
* Itemid
* Itemprop

Through the common cultural attributes of schema.org the sites within the online landscape find expression (after Tilley 1994). In this manner, cultural identifiers exist within this environment as a means of drawing together similar types and attitudes (see Hodder 1982). This “cultural package”, therefore, provides a mode of communication across a range of sites providing a demonstration of how single sites interact within a wider whole (see Layton and Ucko 1996). This shared attribute ensures that the first two results in all search engines for the term ‘stonehenge” are English Heritage (2015) and Wikipedia (2015). The experience of the environment is thereby structured through this specific orientation of these locales.

These sites can be explored through a further examination of the coding. For example, looking at the source codes for the Wikipedia (2015), whilst nominally this research tool is “open-source” and “user-generated”, the page for Stonehenge has been classified as ‘semi-protected”. This can be observed in the coding line, “{{pp-semi-indef}}{{pp-move-indef}}”. This guards the site from potentially unwanted edits or additions that do not meet regulations and requirements. Such a status is awarded to Wikipedia sites that are regarded as significant so that any potential disruption might cause offence. As such, the protection afforded to the virtual site mirrors the means by which the monument is physically protected under the operation of the scheduling system in Britain for sites of national significance (see Bender 1993; Bender and Aitken 1998). Viewing the source code as an excavated site, detailing the formation processes that have occurred, enables an assessment of the changes both at this locale and in the wider landscape that have occurred:

[[Archaeology|Archaeologists]] believe it was built anywhere from 3000 BC to 2000 BC. [[Radiocarbon dating]] in 2008 suggested that the first stones were raised between 2400 and 2200 BC,<ref name=“news.bbc.co.uk”>{{cite news|o-authors=Tim Darvill and Geoff Wainwright|title=Dig pinpoints Stonehenge origins |publisher=BBC|date=21 September 2008|url=http://news.bbc.co.uk/1/hi/sci/tech/7625145.stm|accessdate=22 September 2008|first=James|last=Morgan}}</ref> whilst another theory suggests that [[bluestone]]s may have been raised at the site as early as 3000 BC.<ref name=“Guardian”/><ref name=“Independent”/><ref name=“BBC News”/>

(Wikipedia 2015)

By examining the interjections made in the text and the dates associated with them, the layers of code reveal the individuals who have altered the appearance of the site as well as how changes within the research and academic environment have shaped practices at this one location in the online landscape (after Thomas 1993).

A similar process can be observed with the English Heritage (2015) site. An assessment of the spaces, places and objects of its coding reveals the presence of cultural forces that shape practices and habits within this site and thereby the formation processes (see Schiffer 1983). For example, the use of stylesheets within the English Heritage website ensures a greater degree of homogeny within this space:

rel=‘stylesheet” type=“text/css” href=“[/static/css/style.css](http://www.english-heritage.org.uk/static/css/style.css)“><link rel=‘stylesheet”

(English Heritage 2015)

In this manner, all objects and items within this site are rendered into this one particular cultural identity. The diversity of the site is thereby limited and expression is confined to this singular vision. The formation processes of this locale, therefore, do not share the same connections within the wider landscape as the Wikipedia (2015) page and the points of connection to the external environment are organised and placed at specific junctures:

<li><a class=“facebook” target=“\_blank” title=“View our Facebook page” href=“http://www.english-heritage.org.uk/facebook”></a></li>

<li><a class=“twitter” target=“\_blank” title=“View our Twitter feed” href=“http://www.english-heritage.org.uk/twitter” id=“A1”></a></li>

(English Heritage 2015)

A distinct culture can be observed to have emerged here which controls expression within this space. This culture can be assessed for its traits, ideals and practices through the coding of the site. Essentially, this demonstrates the ideas, values and culture that has created and formed this particular sense of place; the site is ordered upon the principle of ownership, driven by a capitalist model of consumption. In this manner, this site’s formation processes reveal how objects and images are formed as a mode of conspicuous display. For example, the appearance of this particular section of coding, “#scrollerBoxForHighlightGallery img”, enables the display of a slideshow of images to ensure all aspects of Stonehenge are presented on the site (English Heritage 2015). The formation processes demonstrate a focus towards consumption with the prominent appearance of the HTML elements enabling the function of “booking” and providing functions to “buy”. Through examining the layers of coding, the stratigraphy of the site indicates how objects are embedded at particular spaces to ensure their prominence as an object of ownership. The culture that has structured the site is evidenced in the insertion into the code of an object referred to as “doubleclick.net”:

document.write(“<iframesrc=“https://3684123.fls.doubleclick.net/activityi

(English Heritage 2015)

The presence of “doubleclick” on the site provides further evidence of the site’s structuring principle of consumerism (Doubleclick 2015). This is a subsidiary of the search engine Google and it tracks the interaction of the user with the site as a means of directing future advertising across a range of other sites that also use “doubleclick”. The English Heritage (2015) site is thereby connected across the virtual landscape with other sites which also possess the same function. The appearance of this particular part of the code is dated on the site as being part of this online locale from October 2013, a period when plans for the new visitor centre at the physical Stonehenge were revealed. The use of a cultural influence from Google is also apparent in the appearance in the site’s stratigraphy:

var google\_remarketing\_only = true;

(English Heritage 2015)

i[“GoogleAnalyticsObject”]

(English Heritage 2015)

The remarketing tag and the use of Google Analytics provides user-tracking data to enable the development of more accurate advertising campaigns as well as usable statistics on visitor interactions with the site. Therefore, following Berger (1972), the extra functional significance of this code is to heighten the commercial value of that which it represents. The connections with the wider environment are centred upon consumption and the sense of place that is developed through the coding of this online locale is one of possession. The character of the site is revealed in this analysis through archaeology serving not as a metaphor but using the practice of the discipline to understand the formation and use of online spaces.

**Conclusions**

Within recent scholarship, the mantle of “archaeology” has been deployed by an ever-growing field of media specialists who apply the term to illustrate the practice of revealing or uncovering techno-social change. However, the value of an archaeological approach to the study of digital media or online applications is more than a convenient simile. The subject’s distinctive agenda of understanding process through the study of time, objects and space can be applied to the analysis of modern media ecologies. This demonstration of value is not achieved through a radical reorientation of the discipline but a reuse of existing ideas and approaches. Within this framework, archaeology and archaeologists can take a critical perspective to the spaces, places and objects of the online landscape. This analysis can be functional, disruptive, humorous or dissonant, but it remains a mode of engagement which is archaeological in practice not merely in conception.

**Bibliography**

Bakhtin, M. 1981. *The Dialogic Imagination*. Austin: University of Texas.

Bender, B. 1993. ‘Stonehenge – contested landscapes (medieval to present day).” In *Landscape: Politics and Perspectives*, edited by B. Bender, 245–279. Oxford: Berg.

Bender, B. and Aitken, P. 1998. *Stonehenge: Making Space*. Oxford: Berg.

Berger, J. 1972. *Ways of Seeing*. London: BBC/Penguin Books.

Bolter, J. 2001. *Writing Space: Computers, Hypertext and the Remediation of Print*. Mahwah: Lawrence Erlbaum Associate Publishers.

Doubleclick, 2015. Homepage. <http://www.google.co.uk/doubleclick/>

Elsaesser, T. 2004. “The New Film History as Media Archaeology.” *Cinémas* 14 (2–3) 71-117.

English Heritage, 2015. Stonehenge. [http://www.english-heritage.org.uk/daysout/properties/ stonehenge/](http://www.english-heritage.org.uk/daysout/properties/%20stonehenge/)

Ernst, W. 2005. “Let There Be Irony: Cultural History and Media Archaeology in Parallel Lines.” *Art History* 28(5) 582-603.

Fuller, M. 2008. Introduction. In *Software Studies*: *a lexicon*, ed. by M. Fuller, 1–14. Cambridge, MA: MIT Press.

Graves-Brown, P. 2009. “The Library of Babel: Origins of the World Wide Web.” In *Defining Moments: Dramatic Archaeologies of the Twentieth-Century*, ed. by J. Schofield, 123-134. Oxford: Archaeopress.

Harrison, R. 2009. “Excavating Second Life: cyber-archaeologies, heritage and virtual communities.” *Journal of Material Culture* 14(1) 75-106.

— 2010. “Exorcising the “Plague of Fantasies”: Mass Media and Archaeology’s Role in the Present; or, Why We Need an Archaeology of “Now”. *World Archaeology* 42(3) 328-40.

— 2011. “Archaeologies “now”. Creative interventions in the present for the future.” *Archaeological Dialogues* 18(2) 180-196.

Hodder, I. 1982. *Symbols in Action: Ethnoarchaeological Studies of Material Culture*. Cambridge: University of Cambridge Press.

Huhtamo, E. and Parikka, J. 2011. “Introduction: An Archaeology of Media Archaeology.” In *Media Archaeology: Approaches, Applications, and Implications* ed. by E. Huhtamo and J. Parikka (eds.), 1-21. Berkeley: University of California Press.

Kittler, F. 1995. There is no software. *CTheory* a032. [http://www.ctheory.net/articles.aspx? id=74](http://www.ctheory.net/articles.aspx?%20id=74).

Landow, G. 1992. *Hypertext: Critical Theory and New Media in an era of Globalisation*. Baltimore: The Johns Hopkins University Press.

Latour, B. 1996. *Aramis, or the love of technology*. Trans. Catherine Porter. Cambridge, MA: Harvard University Press.

Layton, R. and Ucko, P. 1996. “Introduction: gazing on the landscape and encountering the environment.” In *Archaeology and Anthropology of Landscape: Shaping Your Landscape*, ed. by R. Layton and P. Ucko, 1-20. London: Routledge.

Marino, M. 2006. Critical Code Studies. *Electronic Book Review, Electropoetics*. [http://www.electronicbookreview.com/thread/electropoetics/ codology](http://www.electronicbookreview.com/thread/electropoetics/%20codology).

Mehler, A. 2006. Text linkage in the wiki medium – a comparative study. In *Proceedings of the EACL 2006 Workshop on New Text – Wikis and blogs and other dynamic text sources*, ed. J. Karlgren, 1-8. Trento: EACL. http://www .sics.se/jussi/newtext/working\_notes/01\_mehler .pdf.

Parikka, J. 2007. *Digital Contagions: A Media Archaeology of Computer Viruses*. New York: Peter Lang.

— 2013. *What is Media Archaeology?* Cambridge: Polity.

Poster, M. 1990. *The* *Mode of Information: poststructuralism and social context*. Chicago: The University of Chicago Press.

Ridolfo, J. and Hart-Davidson, W. 2015. Introduction. In *Rhetoric and the Digital Humanities*, ed. by J. Ridolfo and W. Hart-Davidson, 1-15. Chicago: University of Chicago Press.

Sample, M. and Vee, A. 2012. “Introduction to “The Role of Computational Literacy in Computers and Writing””. *Enculturation* 14. <http://enculturation.net/computational-literacy>.

Schema.org, 2015. Homepage. <http://schema.org/>.

Schiffer, M. B. 1983. “Toward the Identification of Formation Processes.” *American Antiquity* 48 675-706.

Thomas, J. 1993. “The politics of vision and archaeologies of landscape.” In *Landscape: Politics and Perspectives*, edited by B. Bender, 19–48. Oxford: Berg.

Thomas, J. 2004. *Archaeology and Modernity*. London and New York: Routledge.

Tilley, C. 1994. *A Phenomenology of Landscape: Places, Paths and Monuments*. Oxford: Berg.

Ulmer, G. 1989. *Teletheory: grammatology in the age of the video*. London: Routledge.

Wikipedia, 2015. Stonehenge. <http://en.wikipedia.org/wiki/Stonehenge>

Wardrip–Fruin, N. 2009. *Expressive Processing: digital fictions, computer games and software studies*. Cambridge, MA: The MIT Press.