**CHAMPION — Seeing**

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**Seeing Is Revealing: A Critical Discussion on Visualisation and the Digital Humanities**

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This paper suggests that there is a repeating subtext that digital humanities are primarily, uniquely, or best viewed as computing services and tools applied to the digitalization and processing of text or literature (Baldwin, 2013). I will disagree with such a subtext and argue that this would be to the detriment of both text-based and non-text-based scholarly research.

I have four reasons to be concerned with any idea that digital humanities are primarily text-based (and in particular not related to visualisation). I propose that historically there wasn’t a clear separation between written language and images; that to be a humanist or a humanistic scholar (not the same thing) one does not necessarily to have high levels of textual literacy; that non-text-based media is part of digital humanities; and visualisation can provide suitable scholarly arguments.

My concern that visualisation projects are not often mentioned as being part of the digital humanities might seem a little paranoid; clearly there are presentations on visualisations, particularly information visualisations, at digital humanities conference. Arguably, digital humanities derives from the humanities computing field, and the humanities computing field is itself heavily indebted to text-based research. Susan Hockey (2004) wrote the following in her chapter ‘The History of Humanities Computing’, in one of the first definitive books on digital humanities (Schreibman et al., 2004):

Applications involving textual sources have taken center stage within the development of humanities computing as defined by its major publications and thus it is inevitable that this essay concentrates on this area.

Such a move has been recently contested (Robertson, 2014b; 2014a), but there does appear to be a text emphasis in many research infrastructures and in the digital humanities conferences (Meeks, 2013) and even in books edited by scholars well versed in visualisation projects (Terras et al., 2013). In that book, the major reference to visualisation is to ask why there aren’t more publications on visualisation in the digital humanities (Svensson, 2013).

# Images and Written Language

Yet visualisation is at least as old as written language. The earliest symbols are artistic rather than literary. Historically, the distinction between text and symbol has been blurred, from early European languages to Asian languages and as part of world history in general (Tang, 2013). Even today, language is geographically influenced (Mark et al., 1989). One can include cave paintings; they reveal the long-term association between image, space, and meaning (Viegas, 2008; Brown, 2012). In some prehistoric caves the paintings are apparently spatial pointers to reverberant spaces (and reverberation apparently indicates spirituality) while some archaeologists believe Lascaux cave paintings are maps of the stars (see <http://news.bbc.co.uk/2/hi/science/nature/871930.stm>). In Australia, traditional Aboriginal paintings are visualisations of mythical knowledge as well as environmental resources; they are cultural schemas and ‘totemic maps’ (Lewis, 1976; McDonald and Veth, 2013).

**Textual Literacy**

To improve public access to digitalised material (Warwick et al., 2012; Kirschenbaum, 2010) we also need to tackle the problem of literacy, digital literacy, and digital fluency (Resnick, 2002). Multimedia, visualisations, and sensory interfaces can communicate across a wider swathe of the world’s population. And although literacy is increasing, technology is further wedging a fundamental divide between those who can read and write and those who cannot (UNESCO, 2014). Yet developing visual literacy is still nascent, even though more and more people read by viewing graphical interfaces, and text-based interfaces cause serious problems for people with low levels of literacy (Medhi et al., 2011; Chaudry et al., 2012).

# Non-Text-Based Media Are Part of Digital Humanities

Archives are not just text, and the digital humanities *are* collaborative and interwoven. Even the book itself is a material, embodied experience. Literature itself is linked to both the image (Theibault, 2012) and to materiality (Rudy, 2011); the materiality of Icelandic sagas and runic inscriptions are considered by various scholars to be essential properties (Jesch, 2013). Humanities is/are not merely multimodal but also embodied experiences. The objects in and on which the humanities are described, critiqued, and preserved are more than just holders for text; they are essential artefacts that give researchers essential clues in the interpretation of text and author. Material objects are not merely brute objects; they are symbolic as well, inscribed into the lived and symbolic world (McDonald and Veth, 2013).

# Scholarly Arguments

Research labs that call themselves visualisation labs include Kings College Visualisation Lab (<http://www.kvl.cch.kcl.ac.uk/dhi.html>), Wired! Lab Digital Art History and Visual Culture (http://www.dukewired.org/), AliVE—Applied Laboratory for Interactive Visualization and Embodiment (<http://www.cityu.edu.hk/scm/alive/>), and the founder of CAVE VR, EVL—Electronic Visualization Laboratory (https://www.evl.uic.edu/). The name also appears in conferences and in journals—for example, the *Journal of Visualization and Computer Animation.* Can they all be wrong?

The above labs and journals suggest that visualisation can also be the development of a simulation rather than the depiction of data or a model. These laboratories may produce high-resolution graphical models to represent archaeological data, but they can also produce simulations to test hypotheses. Beat Schwendimann (2010) explains the distinction succinctly:

A model is a product (physical or digital) that represents a system of interest. A model is similar to but simpler than the system it represents, while approximating most of the same salient features of the real system as close as possible . . . [while] . . . a simulation is the process of using a model to study the behavior and performance of an actual or theoretical system. . . . While a model aims to be true to the system it represents, a simulation can use a model to explore states that would not be possible in the original system.

By creating a simulation rather than a model, we can test hypotheses. So, yes, I am also arguing that games can be considered to be visualisations, of the designer’s mental model of the game world. Games (with examples like *Papers, Please; September 12;* and *Space Refugees*) are persuasive *and* rhetorical simulations.

Earlier definitions don’t appear to understand the persuasive and rhetorical nature of visualisations, perhaps because they wish to use them as value-neutral tools. For example, McCormick et al. (1987) defined visualisation as ‘to form a mental image of something incapable of being viewed or not at that moment visible’ . . . (Collins Dictionary) . . . ‘a tool or method for interpreting image data fed into a computer and for generating images from complex multi-dimensional data sets’. This definition invalidates visualisations that predate the large use of data, does not attempt to explain the mental model and process behind the visualisation, and believes visualization must focused on image generation.

More interestingly, Kosara (2007) posited three interesting criteria for visualisation: it must be based on (nonvisual) data, produce an image, and the result must be readable and recognizable. He added this interesting subcriteria: ‘In addition to readability, a visualization has to be made with the intent to communicate data three steps: realizing that data is being visualized by the image, understanding what is being visualized, and how the display is to be read’. Unfortunately he also tried to create a simple spectrum ranging from practical visualisations to sublime/artistic visualisations. I believe he has conflated two quite different concepts, at least according to Kantian aesthetics. But he has come closer to a more useful and generic definition: visualisation should reveal the process behind the output.

But where is visualisation as a research tool in its own right? Can’t visualisation actually *create* new research questions or at least prove difficult to answer questions? Examples in my field, virtual heritage, include a photo-realistic model which showed colours not actually visible in the ruins of the remaining temple (Chalmers and Stoddar, 1996), computer modelling to deduce the astronomical function of ancient Roman obelisks (http://idialab.org/virtual-meridian-of-augustus-presentation-at-the-vaticans-pontifical-academy-of-archeology/), or digital data-driven maps to create historically derived visual descriptions of ancient Roman journeys (<http://orbis.stanford.edu>/). There have also been more general humanities-orientated papers arguing that visualisation can be reflective and critical (Dörk et al., 2013; Jessop, 2008; Robichaud and Blevins, 2011).

# Summary

Visualization is an extremely significant aspect of digital humanities, and writers such as Burdick et al. (2012) agree, but we need to improve our understanding and communication of visualisation as being part of the humanities not just now but also historically, before the advent of computer data. And to recap: historically text has not lived in a hermetically sealed hermeneutic well all by itself. A world with literature but without the arts is intellectually and experientially impoverished. Critical thinking and critical literacy extend beyond the reading and writing of text. Visualization can make scholarly arguments relevant to the humanities. Therefore non-text-based research should figure more prominently in digital humanities readers and monographs.

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