The Psychology of Images: The Complex Relationship Between Digital Humanities and Visual Culture

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An intrinsic connection exists between humans and the memories they create; they define who we are, where we came from and our accomplishments and failures. However, decades of research has shown how fragile human memory can be. The early linguistic experiments of Elizabeth Loftus demonstrated how through misinformation and suggestibility we could influence and change the memory of others[1]. More recent work has led to many theories regarding behaviour, and many theories and guidelines are now available to show how human decision making can be influenced by external stimuli[2,3]. A large volume of research output exists in this field, but the majority of the research work has focused on language (oral and textual) and its ability to influence readers and listeners.

The digital age has brought along an increased multimediality of communication. This concerns the source data in the field of humanities as well as the ways to perform research and represent the results. The creative nature of digital humanities allows researchers to explore, discover and develop new possibilities for data analysis. Visual representation of data significantly enhances the interpretation potential of the artistic, literary, musical and historical corpora. Visualisation methods developed in other disciplines (such as GIS mapping, graphs, charts and computer graphics based representations) have already been used in some branches of the humanities. However, there is a need to reconsider the assumptions that underlie the use of these visualisations based on our ever improving understanding of human psychology, cognition and perception.

As technologies develop, we are seeing the emergence of the use of multiple modalities in our everyday interfaces (often based on natural language processing technology). However, almost all interaction with digital humanities based visualisations rely on vision as the primary means of passing information to the user[4]. Visual based interfaces have been used on digital devices and displays for many years and their use may be seen as 'every day' and having little impact on the viewer.

However, it is perhaps worth considering that this specific form of visual media interaction requires special care and attention due to its inherently persuasive nature, and the undue reliance that the viewer may place on information presented through a (potentially photorealistic) visualisation medium. There are a number of fundamental implications inherent in the analysis of visual interfaces over textual/oral mediums. Their influence on human memory and behaviour cannot be underestimated. It is important that a rigorous investigation and analysis of all the facets of these interfaces is undertaken.

This keynote speech will introduce research undertaken by the author over the past twenty years that has experimented with, and examined a range of visual based presentation technology. Digital humanities based visual presentation systems (including interactive displays, computer generated graphical presentations, animated graphics and immersive virtual environment technology) have already been used in many innovative contexts[5]. This talk will illustrate research undertaken to assess the effect of visual technology on viewers (in particular their memory and decision making abilities) and describes some of the issues raised by the experimental results. The talk will connect psychological research with human cognitive and perceptual processes, to allow the evaluation and optimisation of digital humanities visual interfaces. The talk will conclude with a discussion of the potential benefits and problems of designing interactive digital humanities displays when considering the impact on human cognition.

[1] Loftus, G. R., and Loftus, E. F. (1974). The influence of one memory retrieval on a subsequent memory retrieval. *Memory and Cognition*, 2(3), 467-471.
[2] Young, W., Davis, M., McNeill, I. M., Malhotra, B., Russell, S., Unsworth, K., and Clegg, C. W. (2015). Changing behaviour: successful environmental programmes in the workplace. *Business Strategy and the Environment*, 24(8), 689-703.
[3] Davis, R., Campbell, R., Hildon, Z., Hobbs, L., and Michie, S. (2015). Theories of behaviour and behaviour change across the social and behavioural sciences: a scoping review. *Health Psychology Review*, 9(3), 323-344.
[4] Powers, D. (2006). Vision in HCI: Embodiment, Multimodality and Information Capacity, Proceedings of the Workshop on the Use of Vision in HCI (VisHCI 2006), Canberra, Australia. Vol. 56. Australian Computer Society, Inc.
[5] Schofield, D. and Mason, S. (2012), Using graphical technology to present evidence, in: Mason, S. (Ed.), *Electronic Evidence*, 3rd edn, LexisNexis Butterworths, pp. 217 – 253.