Mechanizing the Humanities? King's Digital Lab as Critical Experiment

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Introduction

The digital humanities (DH) are perhaps unique amongst humanities endeavours. They force us to confront the conceptual and ethical implications that attend the union of the humanities with engineering and organizational thinking. They demand attention to tools, methods, ethics, and pedagogy, but also organizational bureaucracy, human resource management, economics, and systems maintenance. Rather than merely prompting a bland mechanization of the humanities, as critics suggest, this offers a fascinating epistemological challenge. It challenges us to rethink how human meaning and knowledge are constructed, and how they will be remade as the twenty-first century progresses. This requires a step-change in our epistemic, ethical, and collective assumptions as much as our methods.

These issues are distilled in laboratory settings. Sociologist of science Karin Knorr-Cetina (1999) notes that labs function as blended communities, uniting researchers with technicians and administrators. Access to equipment, chemicals, data, and funding, impact the production of knowledge as much as pure research questions. Issues of finance and organizational power compete with creativity and the need for diversity. Scientists have been gaining insight into this since the nineteenth century, fostering traditions (and injustices) that are well understood . (Adas, 1999). Digital humanities labs challenge us to create parallel traditions, appropriate to the humanities and GLAM communities. King's Digital Lab, launched in November 2016, embraces this challenge, positioning itself as an experiment in infrastructural as well as conceptual terms.

Postphenomenological perspectives current in the philosophy of technology and Science and Technology Studies (STS) help explain our approach. Writers like Donald Ihde (2009b) and Peter Kroes (Verbeek, 2010) embrace the entanglement of humans with technological tools, systems, and processes, and meditate on the material reality that informs our experience of the world. They reject the Heideggerean critique of technology, based on the modernist division of subject and object, in favour of acceptance that entanglement with culture, technology, and ideology is not only unavoidable but provides a window into the nature of human experience (Ihde 2009a). Rather than mechanizing the soul of the humanities, digital humanities laboratories force us to confront our entanglement with technology, along with its enabling infrastructures and ideologies.

King's Digital Lab

King's Digital Lab (KDL) builds on a 30-year legacy in digital humanities at King's College London. The lab represents one half of a new digital humanities model, in conjunction with the Department of Digital Humanities (DDH). KDL provides software development and infrastructure to departments in the faculties of Arts & Humanities and Social Science and Public Policy, focusing on software engineering and implementing the systems and processes needed to produce high quality digital scholarly outputs. The department focuses on delivering quality teaching to its postgraduate students and growing cohort of undergraduates, and producing research outputs in line with its status as an academic department. In combination KDL and DDH include close to 40 staff, host 160 projects, served 130 million webpage views in 2014, and teach over 200 students.

KDL's business, operational, and human resource plans define its research values alongside its business and technological model. It has been established with 12 permanent full-time staff: director; project manager; analysts, software engineer, developers, designers; and systems manager. Contract and temporary staff are used as infrequently as possible, ideally to offer student experience in a software development environment. The HR model is explicitly designed to foster sustainable #alt-ac Research Software Engineering (RSE) career paths. All KDL team members, permanent or contract, are encouraged to use 10% of their time on personal projects (either on their own or in collaboration with colleagues), leading to work with Raspberry PIs, virtual reality, and an interest in maker culture.

The KDL model is based on deeply felt humanistic values, but reflects a level of organization required to manage entanglement with technological systems. The lab manages over 90 projects, including up to 20 that are active in some form, and ~5 million digital objects. The team manage over 180 virtual machines, on an infrastructure that uses 400GB of RAM and 27TB of data. New infrastructure platforms are being trialed that include access to cloud and high performance computing options, in a nod towards a future working with big data, visualization, and simulation. The goal is to facilitate a transition from twentieth to twenty-first century modes of computationally intensive humanities and social science research, but to do so in consciously humanistic terms.

In a rejection of a simplistically 'mechanized' future, development tools are proactively managed and the lab has a 'design first' philosophy (Verbeek, 2006). This is partly a way to manage the considerable complexities that come with advanced DH research and the delivery and management of multiple projects, but it also recognizes that digital tools and methods are, at their best, beautiful. Aesthetic and quality values can extend from front-end design to technological platforms, code, tools, and methods. Data, similarly, can and should be beautiful, not only in adherence to appropriate technical standards but in its conformance to scholarly best practice and deep domain knowledge. Infrastructure and systems, likewise, are always compromised by their material design and ideology (Russell, 2014), but decisions to choose open source components and emphasize access and sustainability enhances control and agency (Friedman et al, 2015).

To reduce complexity and improve sustainability, the lab uses the Python programming language, and Django web framework in preference to other options. The full technology stack is consciously oriented towards open source components, and a balance between functionality and sustainability.
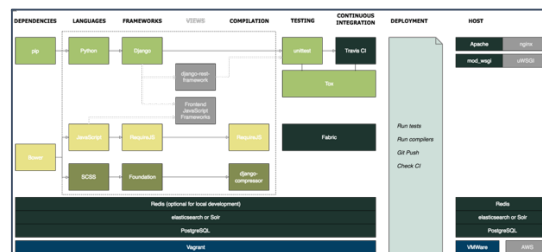

Figure 1

This level of organization helps us manage technology, but also promotes critical awareness: the current technological state of the lab is far from perfect, but it is under control and guided by known critical values. The concept of the 'laboratory' is important in this context. Rather than mechanization, it implies experimentation and risk, but also a certain intellectual seriousness. Scientists learned what a laboratory means to them over a century ago; the humanities and social sciences are only just starting to explore the implications. They are profound, not only in terms of the epistemological implications of putting tools between the researcher and the object of study (with inevitable technical constraints), but in terms of the ideological implications of using industry approaches to software

development and financial management. Consciousness of this ensures the lab is sustainable, and can continue to support scholarship as well as the careers of our team members.

The technological inheritance of the lab is considerable. It includes over 90 live web-based projects, built using heterogeneous tools and programming languages by the (historic) Centre for Computing in the Humanities, (historic) Centre for eResearch in the Humanities, and the Department of Digital Humanities. Funding agencies paid for them to be built, but not to sustain them. Some Primary Investigators (PIs) have retired, or are no longer in contact with King's. Support for these projects is currently borne by the lab, generously supported by the Faculty of Arts & Humanities, but is being managed by an evolving archiving and sustainability plan that will assess each of the projects, determine their intellectual merit, and work with their owners to find the best way to maintain or archive them. The archiving and sustainability model used for this task will be published, as well as being included in the lab's Software Development Lifecycle (SDLC), to ensure sustainability will be considered on day one of every new project.

The organizational chart of King's Digital Lab is flat rather than hierarchical, reflecting an aspiration to be role-based and collaborative: a shared intellectual and scholarly space that exists to experiment with new approaches as well as deliver projects on time and budget. The scale is such that the lab design has needed to be outsourced to multiple authors: director and project manager working with line management to define the business plan and financial model, analysts and developers developing the software life-cycle, UI developer leading the design vision, systems manager ensuring the infrastructure and networking model is appropriate. Together, it amounts to something complex and technologically dependent, but redeemed through a philosophy of shared ownership and conscious experimentation.

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