**SMITHIES — Building**

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**Building Post-Disaster Social Capital: A Current State Report on the UC CEISMIC Digital Archive**

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The UC CEISMIC Digital Archive (Millar et al., n.d.) was developed to store and make publically available digital content produced during the course of a major earthquake sequence, which hit the Canterbury region in the South Island of New Zealand between 2010 and 2012. The project was presented at DH2012, Hamburg, when its key assets had just gone live (Smithies, 2012). This report on the current state of the archive is the most significant to be made at a digital humanities conference since then. It will report on governance, ethics, and technology but, more importantly, reflect on lessons learned and outline plans for the next decade of operation.

The Canterbury earthquake sequence has been described as a truly ‘large-scale’ event. It included a devastating 6.3 magnitude tremor on 22 February 2011 that resulted in 185 deaths and caused significant damage to large portions of the city. Over 12,000 aftershocks followed, including 31 greater than magnitude 5 on the Richter scale. Recovery is ongoing, with portions of the inner city only recently opened to the public. Significant infrastructure renewal and building remediation and construction are expected to continue across the city and surrounding areas for another decade (Johnston, 2014). The University of Canterbury, where the UC CEISMIC team is based, is planning for over 1,000 construction workers to be on campus during 2015 to repair earthquake damage and build a significant new science and engineering block.

The UC CEISMIC project has been positioned by the University of Canterbury as one of four flagship projects targeted to lead the way towards recovery, and leads a consortium of 11 national organizations that has recently expanded to include scientific as well as cultural heritage agencies. The archive currently stores 80,000 public items with a further 15,000 either embargoed or in process, ranging from audio and video interviews to images and official reports. Tens of thousands more items await ingestion. Significant lessons have been learned about data integration in post-disaster contexts, including but not limited to technical architecture, governance, ingestion process, and human ethics. Team members have recently gained access to almost 1 million historic tweets, which will be subject to computationally intensive analysis (Williford and Henry, 2012).

The depth and breadth of the CEISMIC project, and the innovative work it has prompted, are directly attributable to it being a digital humanities project. The archive was modeled on the Center for History and New Media’s September 11 Digital Archive1 and conceived, designed, and built by digital humanists. Its operational program office is staffed and managed by humanities and digital humanities graduates. Its core values are derived from principles instilled in all DH graduates: civic responsibility, the value of our digital cultural heritage, deployment of technology to enable research, use of open-source tools, the importance of craft skills and tacit knowledge, the importance of communication and community engagement, and our responsibility to future generations. It presents an excellent model for digital humanities teams faced with the problem of archiving significant post-disaster events.

The archive has implemented a technical architecture optimized to resolve issues with data integration in post-disaster contexts (Spennemann, 1999). The system relies on a bespoke research-oriented repository built using open-source tools and hosted at the University of Canterbury, New Zealand. It sits on virtualized university infrastructure, including access to New Zealand’s national High Performance Computing (HPC) infrastructure and REANNZ high-speed broadband research network. Tiered backup and recovery stores all content on both high-availability disk and off-site tape storage. DigitalNZ, a unit within the New Zealand National Library, performs national metadata aggregation (Oldman et al., 2014). This allows the archive to leverage an extensive range of existing government IT infrastructure; although over 75% of CEISMIC content is hosted at the University of Canterbury, content is contributed from a wide range of government agencies. The federation is bonded at a technical level through DigitalNZ’s modified Dublin Core schema, with each contributing archive responsible for adding additional metadata if possible (Sugimoto et al., 2002). Access is provided through one key and two subsidiary websites, a mobile app, and two Application Programming Interfaces (APIs). Long-term preservation has been outsourced to New Zealand’s National Digital Heritage Archive (NDHA), a government agency responsible for preserving key national digital assets for the long term.

Unusually for a digital humanities project, CEISMIC has grown to become a significant ‘enterprise’-level undertaking, with a mature portfolio of services, relationships with peak government agencies from the chief executive level down, integration into the university’s project and technical change management functions, and strategic concerns that intersect not only with university but local and national government policy. Because of its vocal advocacy for digital cultural heritage archiving in the immediate post-disaster context, the project is positioned as a possible future repository of earthquake-related big data of radical size and scope (Spennemann, 1999). It is recognized as one of the success stories of the national earthquake experience; it reflects the development of post-disaster social capital in fundamental terms (Aldrich and Meyer, 2014).

Despite this, the CEISMIC project is well known as a community-focused effort with minimal staff and resources, struggling to attract external funding and move key operational staff from temporary to permanent contracts. Although there is awareness of the project at the ministerial level across multiple government departments, the scale of the CEISMIC ecosystem has made it difficult to secure a single business owner outside the research community. This tension is perhaps typical of many digital humanities projects: at once creative and vibrant, and under threat.

Despite this, and unlike other digital humanities post-disaster projects (Rivard, 2012), the intention is to keep the CEISMIC project operational for several decades into the future. This is a perhaps radical aspiration that contrasts with the more modest goals of similar projects, but it offers interesting perspectives for the global community. New Zealand has a particular set of cultural values (and institutional characteristics) that make projects like CEISMIC possible. Lack of state boundaries, a small digital GLAM sector, and a tradition of cultural innovation and inter-disciplinary cooperation combine to allow the CEISMIC ecosystem to grow. Unlike other cyber-infrastructure projects, the archive has exceeded its initial goals and is implementing strategies that appear capable of securing it a long-term future. Again, this was due to the application of digital humanities values rather than computer science and engineering values, and achieved because it evolved from the bottom up, rather than being imposed (even with the benefit of significant funding) from the top down (Dombrowski, 2013). For these reasons it presents the global digital humanities community with a useful model that encompasses design, development, ethics, governance, and community engagement.

**Note**

1. Roy Rosenzweig Center for History and New Media, September 11 Digital Archive, http://911digitalarchive.org.

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