Digital humanities and indigenous culture: Reconstituting the past through historic data modelling

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The impact of nineteenth-century Māori land confiscations is a lived experience in Aotearoa New Zealand today. [1] Despite partial restitution and contemporary treaty settlements, identifying, contacting and engaging missing owners and shareholders of these lands constitutes an enormous challenge for Māori corporations, iwi and hapū. Without accurate data or tools to harmonise existing fragmented or conflicting data sources, issues around land succession, opportunities for economic development, and maintenance of whānau / kinship relationships are all negatively impacted. Like many Māori organisations, Taranaki-based Parininihi ki Waitotara Corporation, Inc (PKW) [2] have 'lost' thousands of shareholders who are collectively owed millions in dividends. Finding these missing community members is a complex problem requiring collection and processing of data from multiple sources using analytics algorithms to infer connections across disparate information sources. A key step in this process is matching names, a work stream undertaken by our research collaborators at the University of Auckland.

However, Māori names never stand in isolation: they embrace contested histories, deep time, and an intimate connection to whenua/land. Instead of focusing exclusively on narrow searches from the necessarily limited information available for each missing shareholder name, researchers at Victoria University of Wellington are capturing everything of value about the clearly defined community to which all the missing shareholders belong. We may call these people 'missing' shareholders, but they may be unaware they are missing or do not know they are lost: they also may not wish to be found. If we remain looking for individuals, then we are overlooking a whole range of opportunities to investigate how an individual is related to a larger collective, be it the family unit, the marae, hapū, iwi, runanga, the corporation. In research terms, then, we are shifting the unit of analysis from the single person to the whānau. For us, this is key to understanding the problem in the context of te ao Māori / a Māori worldview.

Our approach to the problem of 'missing' shareholders focuses on networked relationships – to people and, critically, to land. We suggest that single individuals can be found because they are never lost; they are simply part of a larger network as yet identified. By mapping or 'graphing' this entire network, we can plot the links between people and groups and find out who is most likely to be related to whom and thus to know someone either directly or indirectly. As relationships change over time and people move around, this network becomes a dynamic, complex system that may throw up surprising links and hitherto unknown inter-group affiliations.

Underpinning this whānau or network approach, is a culturally-tuned semantic web/linked open data (CIDOC-CRM) [3] information architecture developed as a interoperability framework to knit together and explore disparate datasets. One of these datasets, Māori Land Online, [4] is the key public-facing portal for documenting and managing Māori land

succession information. It is, however, a complex system that has serious legacy issues which impact on opportunities to harvest, analyse, and visualise the rich whānau (people), whenua (land), and te reo (language) cultural data held by Te Kooti Whenua Māori / Māori Land Court and Land Information New Zealand. Our foundational knowledge engineering work, funded by the National Science Challenge Science for Technological Innovation, [5] is grounded in principles of mātauranga Māori and Māori Data Sovereignty. [6] We have a developed a prototype web app to assist in shareholder disambiguation and a generative model that reveals latent structures in the Māori Land Online data as they have changed over time. These are key milestones towards our goal of building an interoperable data infrastructure capable of unlocking a whole suite of Māori-Crown data for a prosperous economic, cultural, and socially revitalised post-settlement future for Māori.

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