Modelling whakapapa with system dynamics: Developing ICT tools for genealogy research

Alan T. Litchfield
Auckland University of Technology, New Zealand
alan.litchfield@aut.ac.nz


Abstract

The issues dealt with here are not associated with any perceived difficulty a researcher may have in gathering information, nor do they relate to the amount of effort a person must exert in the validation of their findings. The specific problem has more to do with the tools that are currently available to the family history researcher and whether they help or hinder their efforts in regard to collecting and make use of tribal information. The fundamental issue is the adequacy of current tools, the underlying models, and a preoccupation in contemporary information designs to focus on locus rather than demotic representations. The process of creating the required model needs a set of tools that will facilitate concept mapping and can help to establish how relationships are built up over time to form a demotic whole. Such tools are afforded by System Dynamics.

Keywords

System dynamics, genealogy, demotic data, whakapapa, tribal memory, family history, Maori

1. Introduction

In his essay 'Nietzsche, Genealogy, History' Michel Foucault (Faubion, 2000:369) made the claim that genealogy operates in a kind of confused and perhaps anarchic field of documentary evidence, in which documents are used and reused and that each piece of evidence gathers traces of experience from past interactions. By his reckoning it is 'gray, meticulous, and patiently documentary'. In his view genealogy appears to be an earthed representation of past events, as opposed to the idealised forms that one may see in pseudo historical novels or in the musings of philosophers. This argument probably is true of much that is done in the name of genealogy, but it does not summarise what genealogy actually is. Genealogy is a means by which a person may begin to understand their true nature by understanding what has led to their present state. Genealogy is an exciting field of research that extends beyond the study of history into the essence of what caused history itself.

Society is, by and large, defined by its antecedents, by the emergence that society is part of and which genealogy therefore charts. It is through having an understanding of history that a person within a societal framework can form perspectives and conceptions of what is possible for them and it is through their genealogy that a person can position themselves within the framework of a living history - made and recorded concurrently. However this simplistic view does not suffice as an explanation for why people engage in genealogy. It is suggested that having knowledge of one’s roots is so intrinsic to the makeup of any society that it is easily overlooked as unimportant. After all, who has never engaged in discussions of ancestral or family events?

Therefore the reasons that would lead a person to make the choice to begin to find their
family history can be many, whereas the methods for finding information are the same, regardless of where in the world one comes from (Bromell, 1991). This does not mean that information collected is the same from country to country, nor does it mean that the definition of a relationship can be transported from one culture to another. What is being said here is that family histories are passed on using a finite set of media.

The meaning of the word genealogy is synonymous with the term family history, both terms are used throughout this paper interchangeably. The etymological root exists in French, from Latin, from the Greek word 'genea,' translated to mean 'race.' It is the study of pedigrees, and in particular, it traces the line of descent from an ancestor to an individual. How the study is conducted and information retained varies culturally, for example Pacifica cultures have a largely oral tradition (for the Maori this is an individual's whakapapa). Other cultures rely on written records, for example, the practice in England of retaining registers of births, deaths and marriages within the parish church.

The classic method for collecting genealogy information involves hunting down sources of information as they relate to individuals or families, then linking those with events in order to build up a cross referenced body of information. This information may be written or stored within a filing system that suits the individual genealogist. Normally the genealogist uses computerised genealogy applications to store information in various formats (text, images, video, sound recordings and so on) that can be used to produce a standard set of reports (tree diagrams, circle charts, registers and fan charts). In either case (manual or computerised) the genealogist has at their disposal a range of information systems.

Steven Alter (1999:4) defined an information system as 'a work system that uses information technology to capture, transmit, store, retrieve, manipulate, or display information, thereby supporting other work systems.' As well he defined a work system as 'a system that produces products for internal and external customers through a business process performed by human participants with the help of information and technology' (Alter, 1999:3). Of course genealogy will not necessarily involve processes as they have been defined - as business processes, nor will it identify customers or produce products in the classic sense. The role of the customer is summarised as anyone who stands to gain from a work system from which they receive the product of a work system's processes. The product of a genealogical work system does not use variation, differentiation or the quantity of products as its principal measure, rather the true measure of worth for a genealogical system is the quality of information that results from searches and queries - that result in useful information, or information in a useful form.

Information as a term varies from the accepted definition used in Information Technology (IT) or Information Systems (IS). Getting back to Foucault then, the meaning of information in genealogy relates to the vast mass of detail, records or generalised miscellany accrued during the information gathering phase of research (Faubion, 2000:370) which contrasts with the definition applied to information in IS, that information is data that have been organised in a meaningful way, and that data are raw facts which are meaningless by themselves, like names and numbers (Turban & Aronson, 1998:111). When a family history researcher is engaged in research they are also involved in a process of acceptance and rejection of the data they are reviewing, and only select information they perceive to be relevant. Therefore the term information in this context relates to both data and information - in keeping with the popular usage of it - and intermittent uses of data relate to its proper meaning.

2. Divergent Paradigms

In order to present the shortfall experienced in current systems design two adjacent paradigms have been identified. The paradigms do not oppose each other, rather they represent extreme ends of a bar of societal interaction and expression. When queried the paradigms produce significantly different results.

Current genealogy systems position the individual, and the nuclear family, as the central point from which all relationships are formed and to whom events are ascribed.
It is called the locus paradigm because, as in mathematics, a set of points or lines have their position satisfied or identified by one or more specified conditions (Sinclair, 2000:910).

The model that represents the locus does not transform well into the tribal context where the individual is subsumed into the tribe and their identity is often not recorded. In the locus paradigm the nuclear family is observed, and the individual is ranked above that of the events they participated in, or that influenced their development. If an individual is part of a group or is a member of a family then these records are represented as further loci. Groups of loci are then gathered as subsets within the super set of the data stored in the information system.

Within a tribal context the concept of the individual does not really exist. In this case collective or shared understandings and protocols are primary to the individual, for example any decision often requires open discussion amongst the tribal members before the decision is finalised (and then decisions may be rescinded when other voices have spoken). The credence of speakers is determined by rank, which usually remains unchallenged by the mass or populace. This model is identified as the demotic paradigm, relating to people who are massed together with an internal and external hierarchy. Members of this community are bonded through dance, music, story, humour, angst, survival or prevalence, food, clothing, speech and shared history.

Most genealogy work has promoted the locus, often at the expense of the demotic and as a result systems reflect the locus. It has, for example, been reinforced by The Genealogical Society of Utah (GSU), run by The Church of Jesus Christ of Latter-day Saints (LDS) and which maintains the world’s largest computer-compiled index of genealogical data within the International Genealogical Index (IGI), the Family Register and the Family History Catalog (GLC) (Bromell, 1991). The IGI system, otherwise known as an events based system because it records church activities, organises data alphabetically within a country, or by counties within a country. The system records the name of the person, their parents or spouse, gender and the type of event being recorded (for example, baptism or marriage). Important are the batch numbers which identify where the source came from, it is through these that one is able to locate other family members.

IGI can be contrasted with the better known GEDCOM (GEnealogical Data COMmunication) format for transferring data between genealogy systems (Family History Department, 1999). GEDCOM is a lineage linked system which sets out a standards based approach to ease the transfer of data between systems and platforms.

GEDCOM is expressive of the locus - just as IGI is - but with the emphasis on blood lines which tie people together, from parent to child and between siblings rather than events. This bias within the structure of GEDCOM puts other record types, events or personal information, secondary to individual data. This means that shared information is either recorded in a separate file and cross referenced or, if the application program that is processing the GEDCOM file cannot follow cross referenced links between records, then data are repeated. Version 6 of the standard (recently released) transforms the previous standard into an XML application which partially resolves some of these issues.

Existing genealogy systems which use the locus paradigm are still useful for gathering and collecting information though. Once the information has been collected and stored appropriately reports can be produced which establish linkages between individuals. The linkages can be verified or validated by comparing them with events through time, place or through concurrency with either the same or different events. Of course this assumes the data will conform to the locus paradigm.

Demotic data, in the form of story, song, or an account of an event, presents difficulties because information relating to the individual is buried or locked inside the shell of the medium of the song, story or account, so to extract needed information to suit the locus violates the integrity of the medium. Not only are important contextual cues lost in the transformation but the richness that defines a culture can be lost too. The locus paradigm has produced an application interface that provides detailed tools for adding,
deleting and manipulating individual, family, event and source records. Data that is secondary to the individual or family is usually relegated to a field on the interface and is therefore remote to other individual and family records. This poses a problem if one wishes to search for or study, for example, the participants in an event because the event data are scattered throughout the rest of the data.

The new version of GEDCOM has greater flexibility with the addition of hyperlinks between records and the use of XLink to internal and external data sources. This means that data that were previously buried within an individual or family record can be readily accessed with the application of an appropriate search and retrieval system. The advantage is that more information is at a surface level, for example links can be made between the actors in a transcribed story and individual records, family records, events records and so on. Which means this can be used to support research into demotic tribal structures

3. Whakapapa

The basic understanding of 'whakapapa' is that it is the oral history of a person, their ancestry and origins. This understanding, whilst serviceable, needs to be refined. Before defining what is meant by the term whakapapa a few other concepts need to be identified (an extended investigation of whakapapa is addressed in 'Foucault, whakapapa, korero nehe', Litchfield, 2003). It necessary to define what is meant by the term Maori and how the basic tribal structure is formed. It is this that forms the whakapapa framework.

According to the Maori Purposes Act, 1974 'a person has Maori descent if they are of the Maori race of New Zealand; this includes any descendant of such a person.' So for anyone to claim such ancestry people need to know their biological ancestry and traditionally this 'knowledge is passed from generation to generation, with Maori relying on the recital of whakapapa by the appropriate tribal member, rather than on written documents' (Statistical Standard for Maori Descent, 1998). This definition differentiates between those who are biologically descended from Maori and those who share in other cultural and societal affiliations, but still may be descended from Maori. That is, a person may be biologically descended from Maori and not class themselves as Maori, culturally.

Maori as a name which identifies a race has passed into common usage but this is a recent development in an ethnic group whose previous identities were with tribal groups ('iwi'), sub-groups ('hapu') or family groups ('whanau'). The use of the name Maori reinforces the demotic, that Maori is derived from 'tangata maori', meaning 'ordinary people'. This is a reference to the descendants of the 'tangata whenua' ('people of the land'), the first Polynesian immigrants to New Zealand and therefore the host people to whom the others (the 'tangata moana', or 'people of the sea') were offered a place when they arrived in New Zealand during successive trips from the northern and eastern Pacific (King, 1985:12).

Whakapapa is a story that takes years to unfold, while at the same time is being added to. The story is told through the recounting of genealogies and stories, the 'waiata' (songs) and chants. Typically whakapapa starts with the cosmic, with the creation, then moves through epochal and evolutionary whakapapa during which the creation of creatures and other life forms are told, then into human whakapapa (Himona).

Whakapapa is more than a collection of dry facts, a la Foucault, it contains an elemental nature through which the individual takes a spiritual journey to times and places that are locked into the collective memory of the tribe.

Since much that is contained within whakapapa is deeply spiritual or politically sensitive it is generally understood that the knowledge is to be protected. Whakapapa is held as sacred and is not passed on unless the recipient can demonstrate an appropriate level of respect and honour (the term that describes the prohibition of passing on information is 'tapu'). A view of retaining whakapapa is that a person who knows their whakapapa has 'mana' or power and this power can be accumulated, used or dispersed by virtue of how whakapapa is regarded by them.

4. The Issue is Identified
The issues dealt with here are not associated with any perceived difficulty a researcher may have in gathering information, nor do they relate to the amount of effort a person must exert in the validation of their findings. It can be argued that these are part of the journey of discovery that is called genealogy. The specific problem has more to do with the tools that are currently available to the family history researcher and whether they help or hinder their efforts in regard to collecting and make use of tribal information.

Feedback gained from discussing these issues with researchers in different circumstances indicate that while the applications available do not prevent a person from storing information and subsequently searching and retrieving it, they do not make it any easier either. So it may be suggested that the computer has simply supplanted the processes that existed before. Certainly the use of computers in family history research has reached a point where it would not be normal for a person to do their research using manual methods any more. The success of computerisation in genealogy research is suggestive of the need to deal with large volumes of data, with family histories often including several thousand individuals and hundreds or thousands of families.

So the nature of the problem is not one that is so obvious as to make a claim for an absence of features or functions - several proprietary systems already provide significant feature lists - nor would it be appropriate to point to an absence of data type management, the newer system versions are quite capable of processing complex multimedia data types and creating output in the form of video, or multimedia presentations. Instead the problem appears to be more fundamental, to do with how the underlying model was created - that it focuses on the locus rather than the demotic.

Demotic relationships are often contextual and relate not just to people but to places, objects and events. Therefore it can be said that a system ought to accurately represent demotic relationships. The issue here is that this has not been done so a shortfall exists in which demotic relationships have never been modelled for representation in an IS context.

To fill this shortfall a model needs to be developed. The model needs to cater for family history information collection and provide a querying and reporting system that is able to manage arbitrary linkages between people based on other kinds of relationship than the purely generational, time based relationships found in locus applications.

The process of creating the required model needs a set of tools that will facilitate concept mapping and can help to establish how relationships are built up over time to form a demotic whole. Such tools are afforded by System Dynamics, and in particular following the work of George Richardson (1984, 1989, 1991, 1994) and Margaret Archer (1996, 1998). In both cases these authors have applied System Dynamics to social organisations and it is possible that this can be used to map the social organisation of whakapapa as well.

5. Method

The study will apply a multi-method approach to developing the models.

At this time a substantial amount of data exists in a range of media from hand written records to digital recordings. This needs to be entered into an appropriate system, collated, classified and analysed to check its reliability. This provides an immediate source of whakapapa information. Therefore it is not necessary together further genealogical data. What is needed is knowledge of how holders of whakapapa maintain their knowledge, therefore elicitation techniques will need to be applied.

Interviews will be conducted with those who hold whakapapa to elicit how they deal with whakapapa. Manual recording techniques will include audio and video recording of interviews and events. Charles Royal (1993) says that recording the words of 'kaumatua' (senior members of a tribe) is now commonplace so it is not anticipated that there will be too much resistance. He also points out that some things are appropriate to be recorded whilst others are not, for example in 'wananga' (occasions for learning) in his area it is not permitted to record 'karanga' (sacred songs).
As the data are being collected and collated it will be used as a basis for ethnographic and grounded theory methods of qualitative data analysis. From these collected data theorems will be proposed using grounded theory and ethnographic processes, these will need to be tested in at least three ways to ensure their reliability and validity. It is anticipated that some variants that may be analysed would include types of linkage, their frequency, whether any clusters can be observed within the populations, the degree of relationship between people, places, events and so on. The expectation from the researches are that computer based research and analysis tools will be developed. This would include the development of user interfaces to represent data and information in various forms.

6. Conclusion

The value in research of this type can be appreciated from two perspectives, as pure research and research that is applied. The benefit to be satisfied first is whether the study undertaken has been done before, will it add to the scientific body of knowledge? This paper expresses the proposition that it will satisfy both criteria by using a multi-disciplinary approach to gather and analyse data.

As an applied research, the output from the study ought to be in the form of a model that can be applied within any tribal circumstance as well as a set of tools that researchers in genealogy can make use of. The proposed development of an information system appropriately merges with the expected outcomes of the study, insofar that the system would use 'information technology to capture, transmit, store, retrieve, manipulate, or display information' (Alter 1999:4). Genealogy is a complex process of search, contain, sort, retrieve and display. It follows a series of cyclic or iterative stages in which the researcher is required to either delve deeper into a particular history, or to search for new fields of interest.

Of course there are many more questions than answers at this point, not the least of which are:

- Human society has evolved to its present form, what are the characterisations of that form?
- How might those characterisations be applied to the design of a computer based system?
- What would the purpose of the system be? And would that purpose need to match the purposes espoused by people for their own lives?
- Should the system be designed to incorporate or repel cultural bias?
- Is it appropriate to discuss analytical Systems Dynamics in the same breath as the natural human urge to understand and know the passions that motivate it?

References

Family History Department. (1999, 2 October). The GEDCOM Standard (Draft No. 5.5.1). Salt Lake City: The Church of Jesus Christ of Latter-day Saints.


Copyright © 2003 Litchfield, A.T.

The author(s) assign to NACCQ and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The author(s) also grant a non-exclusive licence to NACCQ to publish this document in full on the World Wide Web (prime sites and mirrors) and in printed form within the Bulletin of Applied Computing and Information Technology. Authors retain their individual intellectual property rights.

Copyright ©2003 NACCQ.
Krassie Petrova and Brian Cusack (Eds.)
An Open Access Journal, DOAJ # 11764120 , (✓zotero)