UPDATING INQUIRY TECHNIQUES: FROM *DIALOGOS* AND *HERMENEUTIKOS* TO FRACTAL AND ATTRACTOR NARRATIVE ANALYSIS

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Abstract

To understand and even improve various sites of complexity born out of human interaction, dialogue has long been recognised as critical to the sense making process and the narratives thus generated. Some have gone so far as to suggest that we narrate into being, ourselves along with that which we purport to observe. Paying attention to narrative has become for many an important means of approaching social complexity. Narrative can be considered in terms of generation through dialogue, the discursive, conversational way in which meaning is created by human beings. Narrative too may be thought of as a form of text, albeit, not always in written form. Hermeneutics, the art and science of studying texts, though having its origins in interpretation of religious texts, can usefully be brought to the study and interpretation of the meaning of narratives more generally. This paper illustrates the usefulness of complexity science principles to qualitative social inquiry through reference to a recently completed research project titled, 'Inquiry into community enabling: a review of the Mount Druitt Enablers Program'. Coherent conversations were used to generate the narratives with fractal and attractor narrative analysis guiding the hermeneutic sense making process. It is proposed that bringing a complexity perspective provides an effective means of dealing with perennially contentious issues in qualitative inquiry.

Introduction

This paper illustrates the usefulness of complexity science principles to qualitative social inquiry. Reference is made to a recently completed research project titled, 'Inquiry into Community Enabling: a Review of the Mount Druitt Enablers Program' (Kuhn and Woog 2006) where a complexity based approach was used. Coherent conversations are introduced as a form of narrative generation and attractor and fractal narrative analysis proposed as analytical techniques. These techniques enable researchers to overcome a number of perennially difficult tensions in qualitative research, such as: having the research generalizable or transferable as opposed to site specific; coping with changes in all those involved, as a result of taking part in the research, and providing a means of engaging holistically with participants.

It is argued that an overall balance, or a form of synergistic harmony, is achieved by bringing together complexity science and narrative-based inquiry

in contemporary social research. This seeks to be utilitarian and pragmatic (Kuhn 2005, Kuhn and Woog 2005, Kuhn 2002).

The major principles of a complexity cosmography are introduced in the following section. This lays the groundwork for introducing the three complexity-based techniques: coherent conversations, attractor narrative analysis and fractal narrative analysis, all of which implicate dialogic and interpretive engagement. The research project, 'Inquiry into Community Enabling: a Review of the Mount Druitt Enablers Program' is then discussed and the complexity-based narrative analysis techniques are demonstrated. Reflective comments about the use of complexity to inform narrative analysis and the place of complexity-informed narrative analysis in the repertory of qualitative research methodologies leads to some theory building and concludes the paper.

In the beginning: *dialogos* and *hermeneutikos*
Dialogue is vital to our declamation of humanness (see for example Bateson 1979, Freire 1987, Heidegger 1977, Maturana and Varela 1987, Shotter, 1993, Wittgenstein 1953) (CITATION NEEDED). It therefore becomes central to human inquiry. Although, as Aristotle claims (Clark 1994), the first writings by literate people are no more than a distorted record of past philosophy, from these earliest known accounts of Western philosophy, we see people making sense of, and explaining their world to themselves and others. In so doing, they are engaging in dialogue and interpretation. Plato, whose writings are so fundamental to our earliest records of Western philosophy, and particularly the ideas of Socrates, are generally written as dialogues (King 2004). The 'Socratic Method' or *elenchus* consists of asking questions to bring out the hidden confusions in people's thinking. This forms a pedagogic method for disinterestedly pursuing truth through analytical discussion that is grounded in dialogue and interpretation (see Figure 1). Interlocutors interpret as they narrate themselves and their perspectives into being. It is from the ancient origins in Greek philosophy that the paper title refers to *dialogos* (dialogue) and *hermeneutikos* (hermeneutics - the art and science of interpretation (Plato's Dialogues depict this, see Hamilton and Cairns 1961, Kenny, 1994).

Dialogue and interpretation comprise twin themes throughout the very long history of Western philosophy and the more recent, shorter history of qualitative research (see for example Hamilton and Carins 1961, Denzin and Lincoln 1994). They are investigative methods whereby 'finding out', growing understanding, or generating knowledge is accomplished. To engage in dialogue is to implicate narrative generation, whereby humans as an act of sense making, narrate self and world into existence (Josselson and Lieblich 1993, Polkinghorne 1988).
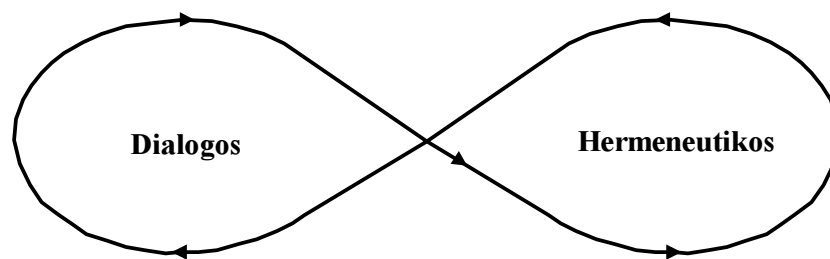
Figure 1: A Socratic inquiry: cycling between dialogue and interpretation; pursuing truth through analytical discussion.

Narrative

Narratives constitute the discursive, conversational way in which meaning is created by human beings (Josselson and Lieblich 1993, Polkinghorne 1988, Rorty 1998, Shotter 1993). Dialogue involves narrative rehearsal and generation. The philosopher, Wittgenstein (1953), argued that language is not a vehicle for communicating language independent thoughts, but that the limits of thought are determined by the limits of expression. By implication, he emphasises the significance of narrative interactions for human knowing and sense making.

Narrative scholar, Polkinghorne (1988), coming from a different perspective, suggests that narrative forms the fundamental scheme by which individual actions and events are brought into an interrelated understandable composite. What people are aware of as their experience is a consequence of their organising schemes. The types of narrative that we exist within shape our experience. The narratives however, are not constructed in isolation; they emerge out of interactions with numerous dialogic partners. Our existence

within communities means we are constantly engaging in dialogue that shape and are shaped by our narratives. In this regard, Socrates could be said to have been in the business of narrative reshaping!

Narratives can be described as circumscribing our living, be it through conversation or dialogue with others face-to-face, or in vicarious manifestations, such as books, films, aural history or spoken law. All afford conversations across time and space that shape present ways of understanding and doing. Although a great many domains of inquiry into human sense making, (such as philosophy, social research, neurobiology) have paid attention to what may be involved in understanding these multifarious conversations (Maturana and Varela 1987, Heidegger 1977, Rorty 1988, Denzin and Lincoln 1994), the specific area of scholarship with a long history of being dedicated to this task is that of hermeneutics (Kenny 1994).

Hermeneutics and interpretation

Hermeneutics is most associated with scholars of religious texts, and refers to the processes of interpretation. The eighteenth century hermeneutics scholar, Schleiermacher (Kinmester 1977), proposed that understanding the narrative of others (spoken and written) can only be accomplished though imaginative dialogue. Gadamer (1976) goes on to stress that humans can only ever interpret through biased perspectives so that the resulting dialogue is an ongoing dance amongst interpreters.

Hermeneutic analysis has become the sequential interpretation of narratives or narrative-based text over time and place (Kenny 1994, Denzin and Lincoln 1994). A close relational link with concepts central to complexity can be made here. Complex entities are understood to be adaptive, self-organising and sensitive to initial conditions (Waldrop 1992, Wolfram 2002). In human systems, an identification and revelation of this can be found in the hermeneutic process. Hermeneutic application can identify the contingency and creativity or self-organising adaptability of human interaction and sense making; it can also identify the ways we constitute and reconstitute our own

social worlds as we ourselves are made and remade by them in the process (Shotter 1993).

Qualitative research

In qualitative research, researchers focus on developing understanding of phenomena in terms of people's meaning making processes. Hence, qualitative research always implicates some focus on narratives and narrative interpretation (Denzin and Lincoln 1994). Case studies, ethnography, auto ethnography, participant observation, life stories, action research and so on, all implicate narratives, dialogue and interpretation. With each of these methods narratives are generated, dialogue is engaged (as between participants, or between participants and various others (historical texts, the researchers and so on), and interpretations are made (both by participants and researchers).

Qualitative research seeks to capture and interpret the very elaborate interrelationships between fragments of knowledge, history, futures, faith and hope, which are present at varying levels and relationships in every narrative. This sets particular challenges for qualitative research methodology to record events as lived and experienced in various ways, and be receptive to the ways in which the experiences are revealed. Arguably, the most difficult and contentious issue in qualitative inquiry is researcher integrity. How influential is the acknowledged, unavoidable experiential bias brought by the researcher to the enquiry process and subsequent data analysis? The challenge for qualitative researchers is to find an appropriate or acceptable balance between neutrality, empathy, usefulness and morality in their inquiry. It is in response to this concern that our research approaches were developed.

The family of techniques that we have come to use in our qualitative research are coherent conversations, which generate the narratives and fractal and attractor analysis which guide analytical interpretation. Our approach draws on complexity science, so a brief explanation of the syncretic association between complexity and qualitative enquiry follows.

A complexity cosmography

Complexity refers to a body of theoretical thought that draws on the language and metaphors of particular mathematical modelling (Waldrop 1992, Wolfram 2002). Complexity recognises multi-dimensionality; but in this connotation, rather than referring to high levels of complication, complexity denotes ways of discerning patterns that characterise the dynamics of the organising processes or forces.

A complexity cosmography, or *kosmographia* - a Greek term referring to a description of the main features of the universe or world (Macquarie Dictionary 1989) construes a world that is adaptive, self-organising, dynamic and emergent, and that comprises organic unities which are also adaptive, self-organising, dynamic and emergent. Given the nature of human beings, complexity can be considered appropriate for social inquiry, bringing alternative images to those derived from linear, objective, positivist accounts of the natural and social world. Complexity based social inquiry approaches aspire to attain an often elusive relational co-dependence between validity and relevance (Kuhn and Woog 2005).

Self-organising

Self-organisation refers to an entity's capacity to evolve into an organised form in the absence of specific external constraints and stimuli (Waldrop 1992, Wolfram 2002). This means perceiving complex organic unities - from individual cells, individual humans, societies and through to the whole world, as each holding the locus of control for its own ongoing evolution or existential forming.

In considering individuals, we see that each of us adapts in ways that are self-generating; albeit, this is in interactions with our environments, including other people,. We maintain ourselves as ourselves while constantly changing over time and through many different experiences. Similarly, households, families, neighbourhoods, cities, nations, and cultures and so on, all self-organise.

Along with self-organising, a complexity cosmography implicates a far from equilibrium situation that is highly dynamic. This second feature of a complexity cosmography is described below.

Dynamic

The descriptor 'dynamic' describes a situation of continuous movement with all entities responding to and influencing others and the environment within which they exist (Waldrop 1992, Wolfram 2002). This perspective is well suited to working with human beings and their institutions. Both dynamism and self-organisation emphasise that context and circumstances change for all, and that all things (people, environments, organisations and so on) are in ongoing flux. It is because of an awareness of this 'dynamic' that we construct composite texts or composite narratives. We seek to acknowledge and capture 'multiple truths'. Putting together an image of entities as self – organising within a situation of ongoing change (both internally and externally), the third feature of a complexity cosmography, that of emergence is not unexpected! To be self organising and dynamic is to be able to exhibit emergent properties.

Emergent

Emergence refers to the capacity of complex entities (such as people) to exhibit unexpected, emergent properties or features not previously observed as a functional characteristic of the complex self-organising entity (Waldrop 1992, Wolfram 2002). In consequence of people's self-organising, self-reflective capacities and complex characters, they are likely to behave as emergent beings and surprise not only others, but themselves as well.

Narrative codifies experience. Through their narratives, people not only describe past experience, but may also construct new roles, seeing themselves doing and living in different ways. This is closely allied with what complexity describes as the *emergent* propensity of a system.

The next section focuses on introducing and describing some emergent outcomes of our work in bringing complexity principles to social inquiry. We begin by introducing coherent conversations, a technique employed in generating narratives. We then introduce two interpretive, sense making techniques (fractal narrative analysis and attractor narrative analysis).

Coherent Conversations

In a complex system, the relationships between entities within the system really matter (Waldrop 1992, Wolfram 2002). They determine the functional interrelationships, the characteristics of the composite system and ultimately its viability and survival. In human systems, a major way of maintaining this communicative connectedness is through conversation or dialogue. Coherent conversations tap into and make evident the connectedness.

The aim of coherent conversations as a research technique is to invite people to generate a narrative through conversation. While a focus group directs or focuses the conversation around a particular topic, coherent conversations aim for the conversation to be:

- Permissive, accepting of the entirety of knowledge, information and opinions that people bring in to it; and
- Critically self-reflective of the processes via which the conversation emerges.

When a group or social system has more information about the views held within it, and the processes by which people converse, the better it is able to understand itself (Kuhn 2002, Kuhn and Woog 2005). Engaging with a group of people in coherent conversations makes it possible to examine the dynamics involved in the emergence of different points of view.

Narratives generated through coherent conversations can be examined for meaning and explored in broader terms to construct a composite

understanding, or commonsense wisdom. The ways that individual views are shaped by culture, values, hopes and lived experiences, can be made visible and thus open to critical reflection and perhaps even review.

As a research technique, coherent conversations:

- Bring in information from inside and outside the system;
- Are permissive;
- Make the discursive process as evident as the thematic content;
- Are both intuitive as well as logical;
- Have recourse to ethics;
- Are self-reflective; and
- Carry an innate sense of maintenance of the system (in that for conversation to 'flow', care must be taken by participants, to at the very least, maintain cordial relationships).

Narratives generated through coherent conversations can be analysed and/or synthesised through the complexity based techniques of fractal narrative analysis and attractor narrative analysis (see Figure 2).
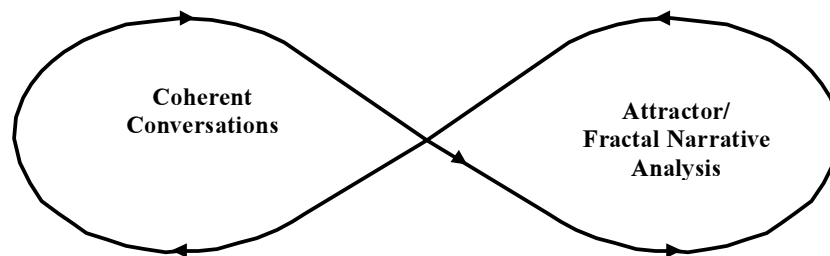
Figure 2: A complexity approach: cycling between dialogue and interpretation.

Fractal Narrative Analysis

Mandelbrot (1977) introduced the concept of fractality as a mathematical framework for studying irregular, complex shapes. He argued that when the complexity of a structure increases with magnification, it might be useful to describe the structure in terms of fractal dimensions.

The idea of fractality is that organic systems (such as humans as individuals or in groups) or generated products (such as narratives) may be examined for patterns of similarity. The key principles are:

- Fractals exhibit the same degree of irregularity at different scales (rather simplistically, but in an attempt to more clearly explain fractality, we could say that fractality exists where the irregularity of the circumference of a small pebble is seen to match the irregularity of the coastline from which it is taken);

- Observing a fractal provides information proportional to the scale (although pebble and coastline may be fractally related, looking through a microscope at the circumference of the pebble will yield different information to looking at the coastline through a telescope);

- The small scale remains an equally complex microcosm of the whole (the pebble for example is just as complex as the coastline in that we could view it according to nano structural elements; it is also just as complex as the coastline as it and the whole coastline are each necessary for the existence of the other); and

- Fractals, the one after another, become transformed (through scale), into one with the other (if we change the magnification of the microscope, and gradually move to taking larger and larger views, we could begin to see pebbles of the coastline forming boulders, cliffs, harbours and fuzzy edges of whole continents).

Blake's (1757-1827) famous lines from his 'Auguries of Innocence' poetically invoke fractal images:

To see a World in a Grain of Sand
And a Heaven in a Wild Flower
Hold Infinity in the palm of you hand
And Eternity in an hour

The properties found at different fractal levels of complexity are considered equivalent (Mandelbrot 1977). The levels are determined by the observer in how they look and what they bring to the observation. In this way, the fractal image is almost unbound in its potential to stimulate conceptualisation, imagination and interpretation in the observer, without losing the connectivity - the so called character, or identity of the fractal. Contemporary French philosopher Morin (2001) evocatively describes human fractality:

> Moreover, in human beings as in other living creatures, the whole is present within the parts; every cell of a multicellular organism contains the totality of its genetic patrimony, and society inasmuch as a whole is present within every individual in his language, knowledge, obligations and standards (p. 31).

Fractal narrative analysis is a useful way of making sense of narratives generated through coherent conversations. Looking at individual fractal comments and locally 'captured' narratives provides an appreciation for themes and nuances replicated throughout the larger complex system within which the conversation is situated.

Attractor Narrative Analysis

Generally, an attractor is an organising force resisting dissipation and entropy (Waldrop 1992, Wolfram 2002). The sun is an attractor for our solar system. It influences the movement and spatial arrangements of planets. A friendly gregarious person is an attractor at a party. Similarly, within the human realm, the will to power is a deeply felt attractor of a psychological type

Attractor analysis of narratives enables researchers to make sense of the narrative without simplification (Kuhn and Woog 2006). The identification of attractors assist with understanding a complex system. From the attractor, one can make inferences about the self-organising character of the system including interpretation of form and dynamics.

Having set out a complexity 'worldview' (cosmography) and introduced research techniques that are based on complexity principles, we further explicate these through recourse to a recently completed complexity informed research project undertaken by the authors.

Introduction to the research project

The authors were invited to evaluate a community leadership program, titled, the Mount Druitt Enablers Program. An initiative of the Chain Reaction Foundation (www.chainreaction.org.au), the program focuses on 'enabling' community development through assisting local people to become more confident in their capacity as community leaders.

The key question guiding the research was, in what ways has the program developed community leaders and made a contribution to more extensive self-determination in the Mount Druitt area? The evaluation focussed on gaining the views of those most knowledgeable about the effectiveness of the Enablers Program. The research report evidenced participants' interpretations of their experiences with the program, as well as their views about its current and potential effectiveness as a means of building a more lively and resilient community (Kuhn and Woog 2006). The fractal and attractor analyses undertaken in this project are outlined below.

Demonstration of Fractal Narrative Analysis

Involving participants with different cultural backgrounds and experiential history in a complex act of inquiry implies that they will interpret the same events and experiences in a myriad of ways. This sometimes results in polarised positions. Reaching and maintaining such a position are integral parts of the dynamic of human sense making. The challenge for those wishing to move to a position of *shared* understanding, or to commence some form of unified action, is to move beyond combative, polarised thinking to a position of collaborative agreement and sense making. This might require some form of theory. For this purpose we used coherent conversations to generate narratives to which we applied fractal narrative analysis in guiding the inquiry's analysis.

The findings of the inquiry were organised and presented as fractal narratives. These were obtained from five key questions asked of participants:

1. How do you see yourself developing through your participation in the Mount Druitt Enablers Program?
2. How has participation in the program personally helped you?
3. How has participation in the program helped your participation in the local community?
4. What have you learnt in this program?
5. What have you learnt about leadership from this program?

Through the coherent conversations generated around the research questions, a significant body of narrative was developed. Within this, certain recurrent themes or explanatory fragments of statement were recognised, which we describe as fractal comments.

In constructing our findings, we clustered cumulative fractal comments drawn from the respondents' responses, and constructed a composite response for each question. The reason for constructing a composite response was to combine the fractals (an enfoldment of the fractals) into a singular narrative. Such a narrative seeks to represent coherence and an emergent understanding as a commonsense reality. The fractal comments were then brought together as a coherent narrative for all of the five major questions. Validity was sought through inviting the participants to respond to this construction.

By looking at the individual fractal comments and the composite fractal narrative, the reader is able to gain an appreciation of the richness of detail as well as an emergent, coherent meaning. In narrative terms, this gives the elusive character sought after by narrative analysts: that of evocative, suggestive richness along with clarity and validity of explanation (Denzin and Lincoln 1994).

The technique can be demonstrated through presenting an exemplar. For the initial question (*how do you see yourself developing through your participation in the Mount Druitt Enablers Program?*), we identified three sub-themes in the narratives of the respondents; namely:

- What the program does;
- How it made the participant feel; and
- Where the program may lead.

Fractal comments from the participants' narratives are shown below (in italics):

What the program does

People coming together in community and taking responsibility

Courses often nurture intellect, this, rather, nurtured imagination

New learning because we are so relaxed and informed

Different ways of learning

Sharing your life experiences

It provides service around the area

We all help each other

You get better insight

Safe environment

It embraces diverse peoples, diverse cultures and leads to respect and diversity.

Helps and supports the marginalised

Welcoming atmosphere… gave affirmation

How it made the participant feel

Feel like I'm going on a holiday

I actually feel validated

Peaceful; good for reflection

Accepted and credible

Very creative

It was like a family

It gives confidence and self-esteem

I felt really, really good

Really beneficial

A true growth experience

Comfortable in the group

Where the program may lead

People don't irritate me the way they used to

Working with the marginalised and disadvantaged community

It should be aimed at young people, particularly Year 8 and Year 9

We then constructed a composite narrative about the ways people see themselves developing through participation in the program. This was based entirely on the fractal narratives of the participants. Examples include:

The program brought together a culturally diverse but like-minded group of people; people, who were interested in helping themselves and helping others and who in that way, were serving the community.

I felt safe and rewarded in working with Enablers. The program has given me a sense of purpose and I have gained self-esteem and confidence from it. I think the program has potential in supporting the individuals who participate in working with and supporting marginalised and disadvantaged members of the community. It may have potential for operating in the school system for Year 8 or Year 9 students.

This technique was repeated for all five questions and culminated in the construction of an indicative narrative representing (in fractal form) the participants' views. As is common practice amongst qualitative researchers (Denzin and Lincoln 1994), this narrative was then brought back to the participants to test its validity.

It needs to be emphasised that, just in any other form of qualitative inquiry (Denzin and Lincoln 1994), repeated cycles of dialogue and interpretation were rigorously generated and tested by the researchers throughout the life of the project. This is in one sense unavoidable. As discussed above, humans interpret constantly as they make sense of their world, including their interactions with others. In another sense, it is important in social research to bring forward for examination and critical reflection, the interpretations made, so as to develop a shared sense of coherence about the interpretations.

Attractor Narrative Analysis demonstrated

In this project, we also analysed and synthesised the participants' views according to what we termed 'attractors of meaning'. The patterning of fractals around an attractor allows us to identify the attractor. From the attractor, one can make inferences about form, function and processes that have and may continue to occur. We concluded that there were three sets of attractors: the personal (which included esteem, identity and enjoyment), empowerment (which included action, task and purpose) and relationships (which included networking, leadership and community engagement).

These attractors can be represented diagrammatically (see Figure 3) to show their interrelationship and their co-dependence. These influence the organisational dynamics, the value system and the purpose of the community.
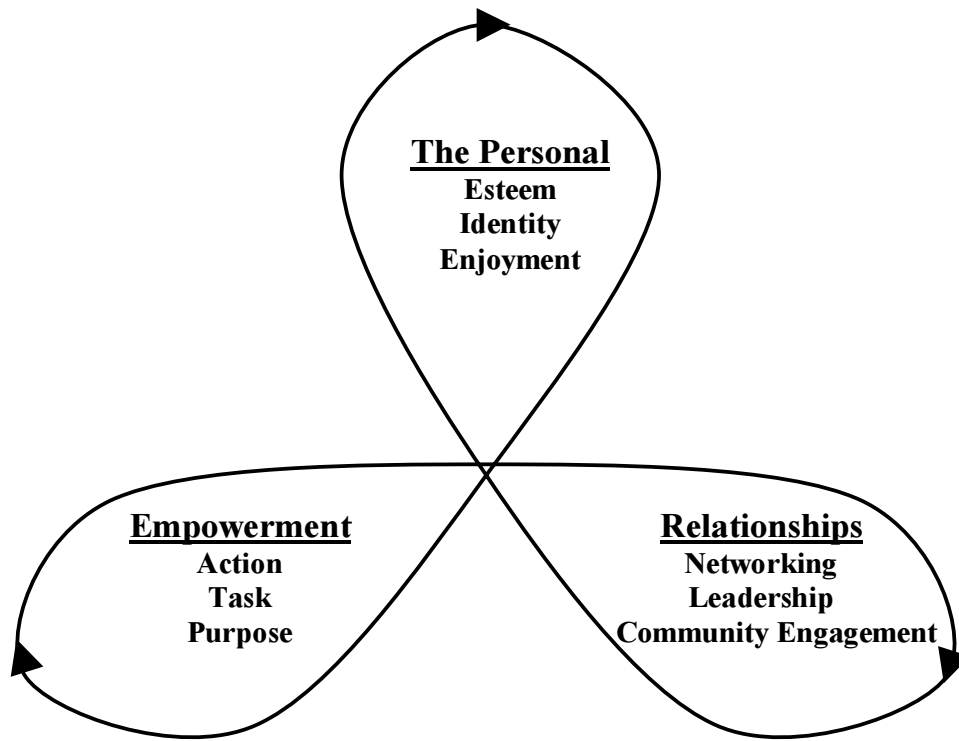
Figure 3: The three inter-relating attractor sets.

From this exercise, we concluded that the program provided the participants with a safe and supportive atmosphere that engendered personal growth and awareness. This milieu provided a sense of community empowerment and self-determination within the Enablers participation group.

The patterning of fractal narratives around particular attractors indicated that program participation developed and enhanced self esteem and a sense of personal acceptance. Through this, the participants saw themselves as more accepting of others. The enhanced acceptance of self and others meant that they were better able to work in community; to work with family groups and clients, and to network with others active in the community. This suggests that an iterative relationship existed: that personal acceptance led to acceptance of others and that as people participated in the program socially (with a diverse range of other community members), their participation (in a safe atmosphere) supported a sense of community and acceptance of others (as modelled in Figure 3).

Conclusions

Qualitative research continues to be challenged by the difficulty of maintaining relational balance between validity and relevance; rigour and richness; as well as utility and morality. Utilising a complexity-based approach, we demonstrated how it is possible to reduce the influence of these paradoxical conundrums. We do not analyse and find the point of balance, but go beyond to a different form of sense making.

In complexity terms, the challenges inherent in qualitative inquiry are:

- Variety (variables) with infinite networks of connectivity that defy boundaries;
- Variables that are in constant motion – the inherent dynamics of the system are such that nothing holds still for secure, confident analysis;
- The system is sensitive and responsive to initial conditions which may remain unknown or unclear to observers;
- Evolving, adaptive changes are under the influence of many, rather than single sets of rules; and
- Due to the sensitivity to unknown conditions and guiding rules, the system exhibits emergent properties which are often surprising.

Coming from a complexity perspective, these conditions are not viewed as problems inviting management control, but as the normal state to be accepted by the researcher and accommodated in the qualitative research process. We contend that acceptance and accommodation is found in the complexity-based qualitative inquiry techniques of coherent conversations, fractal narrative analysis and attractor narrative analysis:

Having begun our narration of this paper in language common to qualitative research, and having introduced a complexity cosmography and demonstrated a complexity based approach to undertaking qualitative inquiry, it is appropriate to end the paper with a different narrative. This narrative may appear as new and somewhat awkward as it represents the beginnings of a newly emerging dialogue – between qualitative social researchers and complexity researchers.

The following insights are indicative of our learning from bringing complexity principles to social inquiry. These insights are presented as emergent outcomes from our dialogue thus far, as complexity informed, qualitative social researchers:

- Coherent Conversations contain, are indeed the manifest product of requisite variety and accommodate as well as generate the dynamic.

- By utilising the principles of fractality we can deal with the narrative variety that is characteristically generated through Coherent Conversations. We can deal with the variety with the sort of attention and acceptance of detail that would otherwise overwhelm cognition.

- Attractor analysis allows us to find and name the recurrent, somewhat stable organising force that would otherwise be lost in the detail. By naming attractors we address issues of generalisability and utility.

- The non-restrictive, eclectic, perhaps even promiscuous nature of the complexity approach promotes emergence. Emergent properties are particularly evocative because they reveal not only what was and is, but also what may be.

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