Toward collective social research:

T4T4T Mentor Space as a case study of a complex emerging system

A report on research into the T4T4T project: February 2005

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Abstract

Within the Teachers for Teachers for Tertiary development the mentors were charged with responsibility for

(a) establishing a professional learning community of tertiary teachers
(b) participating in the emerging community, and
(c) contributing to knowledge of what makes for effective e-learning in tertiary environments.

This paper shows how these three responsibilities were addressed in three quite different ways. Whereas the first was undertaken in a collective community where the participants (the mentors in this case) worked together toward a common purpose, the second was carried out in a collaborative community where the participants supported each other in the interests of personal growth, and the third was most commonly carried out alone, by individual mentor-researchers who wrote reports that were largely independent of input from other mentor researchers.

This paper shows how these different forms of interaction (collective, collaborative, and largely solo) carry different assumptions about what knowledge is and how it is constructed (individually and collectively) within social settings. It argues that complexity theory, particularly theory surrounding the emergence of self-organizing systems, provides a valuable explanatory frame for describing the interactions in T4T4T4T, in particular, interactions within the mentor community, in what is called the Mentor Space.

It argues that the Mentor Space provides insights into ways in which collective research into emerging social problems might be developed. The paper discusses how these insights have informed the planning of a collective social research community within another initiative (the development of qualifications in e-teaching).

Complexity theory is described in sufficient detail to allow an explanation of the notion of *collective social research*. Complex theories of learning (constructivism, social constructivism, and social constructionism) are viewed holistically within collective social research: each accounts for some aspects of learning; together they point to ways in which collective social research projects might be focused directly on addressing emerging social issues.

Introduction

The T4T4T project involved more than a dozen mentor-researchers, selected from the four institutions which make up the Canterbury Tertiary Alliance (CTA), in leading an on-line professional development initiative for tertiary teachers who had volunteered to take part in the project during 2004. Mentor-researchers (referred to henceforth as mentors) met face-to-face as a group once or twice each term and were involved in ongoing discussions within the Mentor Space on the T4T4T Interact site (Interact is a Learning Management System): this space remained private to mentors.

This paper focuses on the patterns of communication observed within two of the spaces established within the T4T4T project. The Mentor Space and the Common Space were two community sites established within the Interact Learning Management System (Interact LMS) which hosted the asynchronous discussion forums and other electronic resources of T4T4T. Mentors were members of both spaces but only mentors had access to the Mentor Space. The mentor community and the participant community operated in quite different ways, even though all of the mentors belonged to both.

Complexity theory can provide an insight into the different ways in which knowledge emerges among

individuals within the two communities identified above. The new sciences (such as complexity theory and quantum mechanics) focus on holism in a way that the discrete sciences (such as physics, psychology and astronomy) do not. Where the discrete sciences analyze the components of a system, the new sciences seek to understand a system as a whole and pay attention to relationships within networks (Wheatley, 1999, p.10). In complexity theory, attention is paid to ways in which complex or self-organizing systems change and emerge in spontaneous, dynamic, unpredictable ways; complex systems cannot be understood merely by investigating their subsystems (Sumara and Davis, 1997, p. 302). Self-organizing systems have predictable patterns, but the detail is unpredictable. Schools are examples - fresh understandings can emerge by viewing schools as complex, dynamic systems.

> As we struggle to understand ways to improve schools, the new sciences reveal a world in which chaos and order are parts of the same system, existing simultaneously. We live not in a world of either/or but the dawning of both/and. We learn that schools are complex dynamical systems that are continually influenced by many variables, just as wind, temperature, and moisture affect a weather system and each other. Weather systems and the course of school improvement are both unpredictable in their details but not in their patterns. (Garmston & Wellman, 1999: 2)

My observation is that the mentor community tended to operates as an emerging self-organizing system while the participant community adopted many of the patterns that are observed in modern schooling system where students are expected to focus on specific formal learning activities under the surveillance of a teacher.

My understanding as a result of this observation is that e-communities which have a collective purpose tend to operate as self-sustaining, self-organizing systems whereas those which are based on shared, collaborative participation tend to adopt patterns similar to those found within traditional schooling where activities tend to be guided by the suggestions of authoritative others.

The paper begins with a description of similarities and differences between the mentor and participant communities with the aim of showing how the mentor community in particular acts as a site of collective knowledge construction. I then look more holistically at the environment in which T4T4T took place to show how my personal interests in collective praxis and national developments in the tertiary education sector have impacted on T4T4T. In the third section I discuss aspects of personal learning within T4T4T based on my own experiences and discussions with a participating colleague who did not belong to the mentor community. The concluding section discusses how complexity theory can be used to provide fresh insights into ways that social science research might be undertaken collectively by groups of people, in order to address substantive social issues in a shared, purposive way. T4T4T was, after all, a collective enterprise where the mentor-researchers were fostering and supporting a professional development initiative and also, at the same time, acting as social researchers addressing the question of how to raise the quality of teaching in tertiary institutions. It was (nearly but not quite) an instance of collective social research.

T4T4T: an unusual e-community

The T4T4T e-community was substantively different from other e-communities of which I have been part. The differences, which I think of as *gentle disruptions* to existing patterns, were enough to provide the project with opportunities to be creative in the solutions we sought, but not so great that we became lost in a wilderness of fresh opportunities. The differences came in: the appointment of several mentor-researchers as opposed to a single mentor; the inter-institutional and interdepartmental nature of the development which meant that mentors rubbed shoulders with staff whose understandings of curriculum, pedagogy and assessment were substantively different from their own; the lack of assessment requirements of the sort that are necessary in e-communities which lead to course credits toward qualifications. In other ways, the e-community was similar to other communities that the mentors had participated in: the duration of the project was similar to that for taught courses; the project had a clear focus in seeking to improve teaching and learning in tertiary institutions and to identify effective ways of using online environments in e-teaching; the project's expectations of participants and mentors were widely understood; the usual features of an electronic learning management

system were available within the Interact LMS. The gentle disruptions provided enough variation to attract the interest of mentors without launching us too far outside our comfort zones.

In the remainder of this section I discuss the Mentor Space as an example of a community within a community by firstly drawing out distinctions between the Mentor Space and the Common Space and secondly showing how the two spaces are marked by quite distinct pedagogical and epistemological understandings.

A community within a community

Within the Teachers for Teachers for Tertiary development the mentors were charged with responsibility for

(a) establishing a professional learning community of tertiary teachers
(b) participating in the emerging community, and
(c) contributing to knowledge of what makes for effective e-learning in tertiary environments.

> Essentially, the mentor/researchers are the lynch-pins of this project. T4T4T will rely totally on this group working together to establish and refine the core ways of working to achieve the goals of the project within the online environment. (T4T4T Mentor/researcher news-sheet 19 February, p. 2)

Three or four academic staff were appointed by each of the institutions belonging to the Canterbury Tertiary Alliance to act as mentors/researchers, and a number of other academic staff enrolled as participants in the project. The distinction was clear: the appointed mentors met to act as lynch-pins by planning and developing the e-spaces; the participant volunteers signed ethical clearance forms and waited for further instructions. The Interact LMS also supported the distinction: two spaces were created on Interact, one for mentors and another for participants, including the mentors. I make much of the distinction between these two communities in this paper because it provides an opportunity to contrast

(a) a community space where the kinds of planning that an e-teacher might undertake alone are made transparent because a team of a dozen, selected, tertiary teacher-researchers from four quite different tertiary institutions share the task as a developmental activity, with
(b) a community space which echoes traditional e-teaching spaces where the mentors care for, moderate and manage the activities in much the same way as an individual teacher manages the activity of a class, in an effort to ensure that the desired curriculum is addressed.

By creating a Mentor Space to which the other participants did not have access, we effectively created a community within a community. The mentors could retreat to the sanctity of their private club (the Mentor Space) to discuss important issues about how to make this an effective community while the Common Space provided a venue for shared, collaborative activities. These managed activities did not address questions about how to develop our shared spaces, instead they encouraged the participants to undertake activities designed to foster the community (we were invited to introduce ourselves, learned about the interests of others, described our individual interests and teaching strategies, and identified what we wanted to gain from the T4T4T process). The Common Space became a laboratory for an experiment in community development, run largely by, and researched by, the mentors.

It is ironic that the participant space was called the Common Space: it has echoes of the English aristocracy with its House of Lords and Commons, and its stately homes and with common ground in the local village. I accept shared responsibility for the naming; I did not recognise the connotation at the time. It seemed appropriate, and still does - schooling, as it is currently structured, perpetuates the kind of social structuring where the elite separate themselves from the peasants, in order to care for them.

By investigating how the Mentor Space differed from the Common Space, I seek to identify how pedagogical spaces might become less hierarchical and more focused on developing shared knowledge; individual learning is not compromised, indeed, in my experience it is enhanced by working in a collective space.

Distinctions between collective and collaborative communities

I am not making value judgements about the quality of the conversations or the importance or effectiveness of the activities in either community. I simply draw attention, at this stage, to the key

distinction which is that one community had a purpose which was *collectively*[i] shared (the mentors had a shared responsibility for the well-being of the community and the learning that would evolve as a result of our research) while the other community was charged with the responsibility to work *collaboratively*, by which I mean that we were charged with the responsibility to participate, to undertake individual action research investigations into our own teaching, and to contribute at least one object to a 'learning archive'.

The mentor community acted collectively as a community of inquiry[ii] nto the ways in which we (the mentors) might foster an improvement in tertiary teaching and an increased understanding of the ways in which e-technologies might be used to support such teaching.

What seemed to be happening was that in the inquiry space (the Mentor Space) we seemed to be dealing with genuine issues: authentic questions were being asked about how we might best foster conversation; we struggled to understand what was expected of us in relation to our action research; we came from different disciplines so our epistemological understandings needed to be teased out before we could understand each other.

Within the shared space (Common Space) we adopted a pedagogy which began with introductions and identification of the particular questions and interests people brought to the project. Whereas in the Mentor Space we had a focus which quickly launched us beyond first introductions and personal interests, in the Common Space we attempted to draw the focus of investigation from the participants. In the Mentor Space we were collegial in our attack on a raft of related issues within a shared context, in the Common Space we fostered difference and individuality. Personally, I was much more interested in the collegial problem-solving of the Mentor Space than in the less focused networking of the Commons, yet, as I show later, I learnt much about my own emerging issues by participating in the Common Space.

It is true that within the Commons important and focused conversations did occur - the discussions within that site were extensive, interesting, challenging, and at times inspiring. Significant discussions occurred in topic groups; meaningful investigations eventuated, in particular in the Second Language area. At times these discussions were shadows of conversations already carried out in the Mentor Space, for example in relation to action research and reflective practice.

I found it somewhat troublesome that the inquiry space where we discussed ways of improving the effectiveness of the community as a whole was not open to the other participants. I agree that, for the majority of the community, the involvement would have been simply too great, but for some, at times, the discussion would have been particularly interesting. The focal interest for some of the participants was, after all, in fostering learning communities within their own teaching: they could have learnt much and contributed much by being involved. It is this discomfort which has led to this paper.

Complex (as opposed to complicated) theories of learning

Davis et al. (2000, pp. 54-78) distinguish between complicated and complex learning theories. The distinction is worthy of some discussion here as it not only helps to clarify the nature of the complex systems but it also provides a useful critique of some commonly discussed, quite mechanistic models of learning.

Complicated learning theories (ibid, pp. 56-62) are those which separate the mind from the body - learning occurs in the individual who acts autonomously within an external world. There are two main categories of complicated learning theories, both of which have been dominant in the twentieth century: behaviorisms (which focus on overt physical actions) and mentalisms (which focus on understanding internal processes). Mechanistic models of learning (models which locate the individual as a machine which reacts in predictable ways) are critiqued because they do not adequately account for the complexity of human interaction with the social settings. Complicated theories rest on the assumption that full understanding of a learning event can be obtained by reducing it to its most basic elements, and by considering the individual as distinct from but interacting with the enviroment.

Complex learning theories (Ibid, pp. 62-78) are those which seek a holistic understanding where a

learning phenomenon is seen in its entirety: embodied learning where the mental and physical worlds are not thought of as separate. Constructivism, social constructionism, and ecological theories (such as is embedded in Te Whariki, the NZ Early Childhood Curriculum) are examples of complex learning theories.

> Complex theories of learning suggest that learning is not about acquiring or accumulating information. Rather, learning is principally a matter of keeping pace with one's evolving circumstances. The learning agent - whether an immune system, person, collective, culture, or species - is constantly revising its memories, its capacity for action, its range of possibilities. Knowledge is contingent, contextual, and evolving; never absolute, universal, or fixed. (Davis et al., 2000, p. 78)

Within this construction, knowledge is substantively different from the forms of knowledge that are commonly taught and examined within school curricula. Knowledge that is contingent, contextual and evolving helps mentors to work together within T4T4T to make decisions about what actions to take and what arguments to promote in order to foster an effective learning environment: learning is a matter of interacting with others in order to keep pace with one's evolving circumstances.

Distinguishing between the Mentor Space and the Common Space

Table 1 summarizes the differences between the two spaces. I am not suggesting that one space is better than the other: I simply want to show that the groups operated differently. The Common Space allowed participants to focus on their personal learning without being encumbered by the questions that drove the wider community. I am not condemning traditional pedagogical spaces - while I may, in the future, argue that all learning spaces should be collective sites where social constructionism is valued, I am not yet ready to do that. Ongoing conversation is needed.

I explain differences between the Mentor and Common Spaces by calling on three complex learning theories:

- constructivism (which I take to refer to as an individual's making of meaning);
- social constructionism (which expands individualistic connotations of constructivism by recognizing the importance of social interaction in supporting and developing individual learning);
- social constructionism (where the focus is on the collective understandings of a group or society).

The solo journey, or individual construction of knowledge, was catered for in both spaces shown in Table 1. Similarly, both spaces catered for the collaboration that is implicit in social constructivism. The Mentor Space was the only one that set out, overtly, to develop collective understandings as part of both its developmental work and its research responsibilities. (Particular conversations and some extended discussions within the Common Space also engaged participants in developing collective understandings - my point is that the Common Space as a whole did not set out to do this.)

Because the mentors are united by a shared purpose there is necessarily a focus on developing shared understandings about what is commonly agreed and which areas remain contested. The Mentor Space did not result in shared agreements: mentors remained divided in their loyalties to particular ways of working, but shared understandings emerged of how we differed, and why, and what options existed for how we might act in the future. Our collective knowledge grew as a result of these interactions. This was a relational form of knowledge; it was a pragmatic[iii] form of knowledge where understandings were constantly changing as we collectively interpreted the events around us, and we and our actions are irrevocably changed as a result of interpretations.

> In terms of … commonalties between constuctivism and social constructionism, both draw on evolutionary and ecological metaphors to describe the dynamical characters (that is, the "knowing") of bodies. And both highlight the ways that what an agent knows is inseparable from what that agent does, which is in turn inseparable from what or who the agent is. Knowing is doing is being. (Davis et al., 2000, p. 69)

Both/and; multiple lenses; unachievable equilibrium; wicked problems

It is not possible to choose between complex theories in the way it seems to be necessary

Table 1 Distinctions between the Common Space and the Mentor Space

The Common Space	The Mentor Space
A collaborative space	**A collective space**
Participants supported each other's learning by discussing strategies for planned actions	Participants debated ideas and needed to come to agreement about planned actions
A participant space	**A purposive space**
The prime responsibility of participants was just that, to participate	The prime responsibility of the participants was to act as lynch-pins in fostering the emerging e-community
Social constructivist learning theory	**Social constructionist learning theory**
Learning is related to individual cognition - learning is facilitated by social interaction	Learning occurs in groups as learners build understandings and come to shared conclusions
Knowledge is located in the individual, enabled by social interaction, but the focus is on what is known by an individual	Knowledge is located in the community, collectively within cultural practices and as patterns of social interaction / ways of being
Metaphor: a school classroom	**Metaphor: a self organising system**
Mentors acted as teachers and shaped expectations, fostering involvement and providing support	There were no mentors, the coordinator acted as team leader being guided by team decisions
Participants other than mentors commonly displayed compliant characteristics, obeying instructions, awaiting instructions	Free-flowing discussions begun spontaneously by different participants

between theories that describe complicated, mechanistic processes. Social constructionism and individual constructivism are perpetually and inseparably linked.

> Thus rather than think of the individual and society as forming the opposite sides of a dichotomy, we should instead think of them as inseparable components of the same system, neither of which can make sense without the other. The individual/society system is therefore the unit of study, as neither term refers to something which, of itself, can be properly understood. (Burr 1996: 108)

The mentors developed a Common Space which was modelled more on understandings about individual learning within traditional classrooms than on understandings of collective social development where interesting social questions were addressed. We, the mentors, did not ask the participants to grapple with questions about how to improve teaching in tertiary institutions: we asked them to grapple with how to improve their own teaching. We asked them to use action research as a tool within their own teaching - presumably because we agreed (or the project planners agreed) that action research was a good thing for teachers to do.

The focus of collective investigation within the Common Space was not key question underpinning the T4T4T development. Instead, the Common Space became a place in which the theories of the mentors were tested. The underpinning assumptions of pedagogical spaces within post-industrial schooling were not troubled within the Common Space. (By post-industrial schooling I mean learning spaces where the teacher controls, or in more recent, less authoritarian pedagogies, manages, such things as curriculum, classroom activity and assessment for large numbers of students who are located in the same place at the same time.) Davis et al. (above, p. 6) write that *"Knowing is being is doing."* The participants knew how to behave as students, they behaved that way, they were that way. Their space did not have enough *gentle disruption* for them to act otherwise.

There was one exception to this generalization: one participant chose not to act as 'student' - not to conform by speaking only in the spaces provided for her conversation, not to wait for mentors to raise fresh questions or issues. Her non-compliance to patterns of behaviour were quite deliberate. When I discussed it with her, in preparation for writing this article, she explained that she knowingly resists unnecessary constraints.

Her instincts are, in my opinion, geared toward promoting self-organizing communities where non-intended constraints can inhibit participation.

In the next section I consider ways in which the T4T4T project relates to the wider social and political context in which it is located. I discuss my interest in the study and the socio-political context in which it is located, and mention some ways in which understandings that have emerged within T4T4T are informing the collective development of another CTA project. I build on the distinction between collective and collaborative spaces by extending the ideas into spaces which are personal, national and local.

T4T4T in context: personal, national and local spaces in 2004

The project emerged at a time when I had just completed my PhD thesis, which focused on collective praxis[iv]. I was recovering from a solo marathon in which I had written about the values of working collectively and yet I had had to write alone. (Ironically, I write alone again: at this point after being involved in a collective development with lots of collaborative possibilities, I am constructing a report in isolation from the community.) My thesis then, and now, is that complexity, pragmatism and post-structural theory have much to offer teacher education, and that professional development could usefully be thought of as a form of collective praxis where teachers build theory and raise questions for ongoing investigation. T4T4T is a site which enables exactly this kind of collective praxis. I could not believe my luck: to be involved in a project which so closely related to my thesis gave me an opportunity to test and expand on the ideas I had been developing, and to do all that within a community of inquiry. The project could not fail, in my eyes, because whatever happened, I had much to learn.

The socio-political environment

Nationally, T4T4T arose at a time when Performance Based Research Funding (PBRF) was pushing the focus of academic staff within tertiary research-and-teaching institutions toward increasing the quality and quantity of research publication, arguably, at the expense of quality teaching. T4T4T was perceived by some as an attempt to maintain or improve the focus on teaching within the tertiary sector.

During 2004, a number of policy consultation papers emerged from the Tertiary Education Commission (TEC) related to PBRF. These papers added to the perceived relevance of conversation within some sections of the T4T4T site. The discussions, particularly in the mentors' forum and latterly in the more general forums, were to some extent driven by the fact that these issues were being addressed nationally: the opportunity to clarify our views in a shared environment had the potential to strengthen our respective voices. Discussions flowed around the importance of practitioner or action research as a tool for ongoing teacher education, and about whether teachers in tertiary institutions should be required to have teaching qualifications. A discussion site such as T4T4T provided a space where future national initiatives could be discussed: it was a space from which collective comment and policy advice could emerge. This had some impact on policy: I, for example, took a much more active part in PBRF consultations because my breadth of understanding had grown, and therefore my confidence to speak out nationally, and I know of others whose voices have also been strengthened by T4T4T. The T4T4T community as an entity did not, however, capitalise on its potential to make direct submissions to sites of emerging national policy. We did not think to do so. Yet we had great potential.

Questions about how to reduce the disparity between Māori achievement and that of other students were also on the agenda nationally during 2004 (see the work of Bishop et al., (2003) for example). We did not address this issue directly within T4T4T. In retrospect, I wonder why we did not. Several of our participants identified as Māori, others were learning Māori, there were discussions about teaching Te Reo within one discussion forum. I discuss the silence in addressing issues of Māori achievement a little later in this paper when I reflect on my own learning as a result of the T4T4T project. Perhaps T4T4T had potential to do much more than we realised.

In touching on these three national developments within the educational field, I have raised questions about ways in which T4T4T had the potential to contribute to policy development by being a site of collective knowledge construction. We largely missed the opportunities available to us, perhaps because we had focused in the Common Space on individual development of teaching skills and general discussion about educational issues; we did not seek to distil our understandings in ways that would contribute to national debates.

The ways in which T4T4T impacted on local initiatives are more transparent to me because I was deeply involved in the collective development of qualifications in e-teaching, which I discuss next.

The local environment: diplomas in applied e-teaching and support

A number of people who were involved in the T4T4T project were also involved in another CTA development. The Christchurch College of Education in association with its CTA partners has been contracted by the e-Learning Collaborative Development Fund (eCDF) to develop diploma and certificate qualifications in applied e-teaching and support at levels 7 and 8 (I shall refer to these, henceforth as the e-teaching qualifications). I report on this development here because of the synergies that linked the two initiatives. In particular,

(a) insights that emerged within T4T4T informed the e-teaching development, and vice versa,
(b) individuals who were part of T4T4T met again within the e-teaching network; communication was enabled
(c) shared experiences within T4T4T of teaching with technologies (such as blogs) provided many of the e-teaching developers with important shared experiences.

A key development within the e-teaching qualifications is the recognition of the importance of community as a central phenomenon surrounding e-teaching/learning spaces. One fear held by the developers was that teachers would relate to the community idea, but those with technical expertise and interests would not. My initial qualifications were in mathematics (in the 1960s) where many of my fellow students were not much involved in the social scene at the university, and later when I studied computer science (in the early 1970s) I also met people who did not take much interest in social interaction except in relation to their specific interests: I could understand the stereotypical view that *"teckies will not want to be part of a community - they will just want to get the job done."* This appears not to be the case - there has been considerable interest expressed by people whose specialization is technical but who recognise the need to understand more about pedagogical principles, to be able to take part in discussions which relate to developments within their places of work, and so on.

I believe that the value of community has been supported by the T4T4T project. It has simply become clear that there was a buzz of energy surrounding the people who meet on T4T4T and who therefore have diverse but meaningful issues to discuss and ideas to share when they meet face-to-face. I am not suggesting that T4T4T engaged all the participants (it did not): I refer to a buzz of interest among those who were engaged and shared their enthusiasm.

The e-teaching qualifications are being developed in ways that foster collective learning as well as individual learning within a collective community of inquiry. Complex learning theories underpin the e-teaching community which is yet to emerge. The future community may be seen as a learning space where the collective, shared purpose is to investigate authentic issues related to the pedagogies and technologies that support e-teaching.

Students, the coordinators of courses within the qualifications, the subject specialists who can advise on individual developments, and those who will be involved in supervising individual student progress will all have access to the community where meaningful questions are investigated collectively and specific questions are followed through and reported upon by individual students.

The proposed e-teaching community can be thought of as an emerging, self-organizing system. Unlike T4T4T, it has no obvious endpoint in that, provided the qualification attracts students, it will continue to be taught. The community should be self-sustaining in that it requires different forms of expertise among its participants: we will need to include teaching staff who have expertise in teaching and e-pedagogy, in educational design, in

technologies and multimedia, in assessment, research and in community development so that students have access to varied expertise to support their own specialist developments. Furthermore, because it has students at level 8, there will be research outputs emerging from student work. If the community grows to the extent that it involves a critical mass of people from the various organizations (i.e., teachers, students, and mentors from not only the education sector but also business, commerce, the public service, and industry) then it will provide exactly the kind of space where significant, emerging issues within the area of e-teaching might be investigated.

The internships and research investigations that are carried out within the proposed e-teaching community will be findings where the practitioners (including students, teaching staff, and mentors)* report on developments that have taken place within a collaborative environment where the kaupapa encourages (indeed requires) participants to support each other in their learning. Experiences from within T4T4T have informed this development in ways that cannot be easily articulated. I believe that without T4T4T the e-teaching development would be much less robust and forward thinking. We, the developmental team, gained confidence through our shared involvement in T4T4T and the personal insights we gained as participants.

*As I write, I have become aware of the importance of all participants in a community contributing their emerging insights into the collective learning of the group. Staff, as well as students, need to be sharing their emerging insights within the community. If this community were to rely only on the research and developmental reports of its students it would be creating a pedagogical hierarchy of the kind that emerged within the T4T4T project. The question of how the collective learning of a community might be reported remains. Collective understandings are carried to other settings (just as understandings of T4T4T are now informing the e-teaching development) by individuals in experiential ways that are not easily discerned. There is also a need to recognize the emerging understandings through some form of collaboratively written report or monograph which is published in some ongoing way. The community will consider how this challenge might be addressed as it establishes itself in coming months.

This points, again, to the anomaly in the reporting of the T4T4T project. Even though we, the mentors worked collaboratively within the Mentor Space, and collectively within the Common Space, we are writing solo reports. There was not time to look collectively across our respective reports and identify common threads and trends and understandings. It is because of this that I suggest that the Mentor Space was nearly, but not quite, an example of a collective social research community.

We anticipate that the e-teaching community will emerge as a community of inquiry which could act as a case study of community which demonstrates how collective investigations into problems which are authentic and relevant can support the growth in both individual and collective knowledge, of the sort that is contingent, contextual, and evolving. We believe that graduates from this qualification will have experiences which allow them to work collaboratively with others to foster growth, and collectively to foster shared knowledge construction.

In the preceding sections I have shown how two kinds of communities have emerged within T4T4T: a purposive community represented electronically by the Mentor Space, and a participatory community represented by the Common Space. I have also pointed to ways in which the timing of T4T4T has occurred at a point where my recent individual work and the collective interests of the nation have overlapped in ways that have suited me very well: not only was I able to expand on ideas from within my thesis, but I was also able to work within two development projects at local level, each of which was linked to national developmental initiatives and, furthermore, the community within T4T4T allowed me, personally to reflect on some of the issues that troubled me as a teacher working in the tertiary sector. In the next section I dwell on the kinds of learning I would have liked to have occurred for me within the participatory community which was the Common Space. The fact that the questions I am

about to raise were not resolved is not important. What matters is that I am now more aware of the questions and more able to articulate them in ongoing conversations within the education community, and beyond.

Reflections on my participation within self-organizing communities

I wish to talk about some of the personal issues that arose for me as a participant in this project. I was aware when I began working in T4T4T that I had questions surrounding my personal style and the kinds of understandings I contribute to discussions. Not until now, when I try to write about these things in ways that contribute to this discussion about the emergence of knowledge in practice, have I become aware of their importance as part of a learning process.

My questions relate to three areas: how my interactions affected the participation of others, ways in which communities such as this could better reflect bicultural values, and relationships among the notions of practitioner research, action research, and improvement in teaching. Had I been able to articulate these questions more directly at the start of the year, my participation in the community would have been different, but the point is that I could not articulate these questions earlier than now. The questions have emerged as important at the same time as the experiences that provide tentative resolutions. Nor do the questions remain static - they are changing in dynamic ways as I continue to live, holistically, in the midst of a multitude of other social and material questions.

In this section, I comment on some aspects of my three emergent questions, and the social issues in which they are embedded. My aim is to show that my personal questions are similar to those that exist nationally, and to suggest that both personal and national issues are echoed within T4T4T conversations. Social issues are magnets which attract attention with a variety of self-organizing systems, in this case, at the levels of the individual, the T4T4T community, and society.

Social issues can be identified by noticing patterns in the media, in community discussions, and individual thinking. Signals of emerging social issues are things such as: questions, debates about meanings, actions and criticisms of actions, evaluations of the impact of actions, emerging problems, dissenting points of view, radical action, resistance to current policy and practice, proposals for change, consultations, policy adjustments and so on. A social issue can be thought of as an issue that attracts attention because there is a need for society to adapt to changing environmental pressures. If a similar pattern appears within nested systems (such as individual, community, society) then that is an indicator that it is a significant social issue. Recognition of such patterns is, I suggest, an indicator of validity within complexity research: perhaps it could be called fractal validity (*fractal* being the term used to describe the repetition of patterns at different levels within a structure, such as fern leaf).

The three issues I raise echo through individual, community, and national structures, each of which can be thought of as a self-organizing system. Issues arise in different ways in different systems, but the fact that similar issues can echo through different systems, is an indicator that the issue is a substantive one; similar kinds of challenge appearing in different systems is an indicator that much could be gained by researching within each of the systems.

Interactions and participation

In an earlier draft of this paper, I wrote at length about questions that arose for me in relation to my postings in an asynchronous environment: I wondered about the length and frequency of them and the impact of them on others, and concluded that *"in T4T4T there are few boundaries except those imposed on ourselves by ourselves."* Other participants do not provide body language for me to read: I cannot judge the body language of those who say nothing.

Within the Mentor Space I was not troubled by silence; my postings were commonly replied to in a way that interested me. I was engaged - I was actively involved in what I have come to think of as creative participation. Creative participation involves the writer in seeking out meaning while writing, and writing in order to tempt other people to respond and comment because the writer is interested in what others will say. I am writing this paper to tempt responses from

interested others (the paper is required by my contract with the project, but it is being written in the hope of attracting ongoing discussion). I try therefore try to write creatively and clearly, in ways that might *gently disrupt* (see above) assumptions about the purpose and audience of research reports. I try to explain my ideas in ways that might provoke response and thereby help me learn from and in association with others. Creative participation occurred for me mainly, but not exclusively, in the Mentor Space. Engagement is crucial: when I became very busy in the third term, I lost engagement in T4T4T and found it very difficult to regain. Although I love to be involved in purposeful discussions such as those in the Mentor forum early in the project, and the oral discussions later in the project, the site did not attract my engagement later; the analysis in this paper suggests that this is because I and the community had lost the sense of purpose which attracted my enthusiasm initially: the Mentors no longer had a shared goal which challenged my creativity. The focus shifted from that of creating shared meaning to one where knowledge objects were being developed by individuals and small groups in constructivist way.

What then of silences? Within self-organizing systems interactions among neighbours is intensely important. I am convinced that lurking is a very healthy learning strategy - sometimes I lurk in order to pounce on ideas which are novel to me. The problem of how we build and maintain a critical mass of people who are able to engage creatively in a community site such as T4T4T or the emerging e-teaching site remains elusive; ongoing conversation is needed.

Postings from participants were also interesting to watch, as were the silences. I hope someone else has done an analysis of posting patterns because I am sure important understandings could emerge from that analysis. My impressions, without a detailed investigation, are that some people spoke only once or twice and did not answer questions floated by other people. I saw that participants who were relatively silent early on came to life in later, more focused conversations. Engagement occurred, I suspect, where shared meaning was being developed, and the participants in the conversations were engaged in ways that tempted their creativity - but this is only a suspicion; ongoing conversation is needed.

Communities with collective values: biculturalism in Aotearoa New Zealand

A personal disappointment for me within T4T4T has been the failure, as far as I can see, for meaningful expression of Māori values to emerge as a routine part of the community. Despite the fact that many people indicated that they were Māori or that they were currently learning Te Reo, when I searched the data base, I could find little evidence of influences supporting the kind of biculturalism that is emerging strongly in other places within the education system. I fear I will be misunderstood here. I saw nothing that was anti-Māori; I saw instances where whakatauki (sayings) were used meaningfully within postings by a couple of participants; we developed an 'Ako Space' for discussions of teaching and learning within the Common Space, thereby capitalising on the Māori understanding of the very close connection between the teaching and learning; the words Māori (or the variants, Mäori and Māori) occurred in about 70 postings, ako in 80 postings, wairua, aroha, whānau together notched up twenty one postings (12 from one participant*, nine spread among four other participants). But these things did not address the issue I was unconsciously seeking.

*Bronwyn Thurlow, (Kai Tahu, T4T4T participant, Christchurch College of Education) was an active participant who was clearly *engaged* by T4T4T. From the time she first enrolled her postings popped up in a variety of places, they were always interesting, always informative, quietly challenging assumptions by raising fresh questions, skilfully playing with metaphor and story to make subtle points clear, commonly pointing to Māori perspectives, commonly calling on Western philosophers.

Initially, I was delighted to see that quite a number of people enrolling on T4T4T indicated that they were Māori or were learning Māori. I hoped that conversations or patterns of interaction might emerge which took on some elusive quality which I think of as bicultural. I as Pakeha with close family connections who are Māori, find the educational settings in which I am immersed particularly monocultural. By this I mean that the values that I associate with individualism seem to dominate, and institutional procedures seem more important than people. I had hoped to see values

which supported collaborative growth emerge in some way within the community: I noticed very little that I could report on. This means that I am now trying to tease out what I did see, and what I might have been hoping to see.

Bronwyn agrees that the site was monocultural: *"Absolutely monocultural,"* she said. We began to discuss how this was so, and figured that the whole question was fraught with assumptions. We talked about whether e-communities seem linear because so many people use them in linear ways and so few *"pop up all over the place"* with comments and ideas. Bronwyn tends to look on the world in holistic rather than linear ways: to her it was natural to take part in various conversations, where most other participants tended to restrict themselves to particular threads. We talked about not being scared of ideas: Bronwyn tells the story of a conversation with a physicist who assumed that she knew about his topic because she did not enact a social script that goes something like: *"Oh my goodness, I know nothing about physics."* We talked about the role of being 'devil's advocate' which involves sending messages saying: *"Hey, it does not need to be like that."* We did not succeed, within our T4T4T community, in finding out how it might have been different. Perhaps the medium militates against it, but perhaps we could use it less linear ways. Ongoing conversation is needed.

In talking about things bicultural within a predominantly Pakeha group I feel stifled and silenced by political correctness, Pakeha ignorance of things Māori (including my own ignorance) and the knowledge that I cannot speak for Māori and do not have the right to try.

I have an experience of seeing how very important Māori values and language are for Pakehā - it is as though English does not have the words to explain the ideals that teachers sometimes strive for. Early in 2001 I led a workshop where a group of teachers were figuring out what the term 'engaged learning space' might mean in relation to their own teaching. Based on the work of bell hooks (1996) I had asked them, *"What would be the characteristics of such a space in your classroom?".* The first group to report back used only English words and had had difficulty (I had constrained them by asking them to report on three key words): they chose 'passionate', 'authentic', 'valuing all responses'. The second group chose: 'aroha', 'manaakitanga', 'wairuatanga'. In discussion, the first group indicated that they preferred the Māori words: *"That's what we meant,"* they said, *"but we did not have the language."* Other values, in particular whanaungatanga, were added in conversation. (This is reported in Mayo, 2003, Chapter 6, with an earlier version in Mayo, 2001.)

I see these Māori values as being an important foil for the dominance of Western individualism. These values care for every individual within a group, but always as part of the group; they do not exclude or isolate a person; but always, the individual is also expected to care for the group. Bi-cultural spaces, as I understand them, are spaces where empathy and honesty reign, where diversity is welcomed, and the collective is always treasured. They are spaces where laughter is common, and wisdom is often understated and metaphorical: Western rationalism does not overshadow the power of human creativity.

Yet these kinds of values are not unique to Māori spaces - these elements are important in other places too. Perhaps if we were to foster spaces where the collective is valued then Māori and all others would be at home. Perhaps it is not so much that that Pakeha need focus on things Māori but rather that we need to struggle to overcome our own individualism, arrogance, and assumptions. Perhaps I can support the growth of biculturalism by fostering collective spaces of the kind I discuss in this paper. Ongoing conversation is needed.

Practitioner research, action research, and improvement in teaching

The assumption that tertiary staff will improve their teaching through some form of reflective practice or action research interested me at the start of this project. It still does. I fear it is a fallacy.

In my thesis (Mayo, 2003) I grappled to understand how action research and reflective practice complement each other as activities that are relevant to practicing teachers. My critique of reflective practice (ibid, Chapter 4) highlights two major points: reflective practice tends to locate the teacher as an autonomous, responsible, independent entity (Parker, 1997) , and it encourages the teacher to struggle to address

systemic problems without the necessary power or resources to effect change (Smyth, 1992). Action research did not address either of these concerns in any systemic way: even though its roots are in critical theory, I found that many action research reports were geared toward teachers making changes which were either cosmetic or grounded in theoretical practices which are currently challenged (I refer, for example, to complicated as opposed to complex learning theories). Action research did not address my desire to ensure that critically reflective practice was indeed socially critical and at the same time recognized the complex, dynamic nature of the teaching process, the embodied nature of teaching, and the classroom as a collective space. In order to address this lack I coined the word praxitioner and defined as a term as applying *"only to those activities where the teacher recognises the political nature of praxis, and the potential for collective practice to influence society in the interests of social justice"* (ibid, p. 15). I then built on that term to define both praxitioner research and a praxitioner collective. Because the text in my thesis at this point is relevant to this discussion I have included it as Appendix 2.

Within T4T4T I have used the phrase practitioner research as an approximation to praxitioner research: praxitioner research assumes that the researcher will be looking for data to inform practice from a number of sources including their own personal experiences, working collectively with students, working collectively with colleagues, and being informed by educational literature. In other words, the practitioner researcher is seeking holistic data and working collectively within her/his own spaces. The practitioner researcher is active in constructing meaning and sharing it with others.

I had hoped that within T4T4T there would be opportunities to investigate ways that teachers might link together to investigate aspects of their teaching, share ideas collectively, and wonder in what ways teacher education might develop within the tertiary sector. I had hoped, I can now see in retrospect, that there would be some opportunity for those who are not trained as teachers to experience and name some research-oriented educational questions related to their specialisms. I had hoped, without being able to name my hope, that the gap between teaching and research might be bridged so researchers who knew little about teaching could see the relevance of *ako* to ongoing developments within their specialist fields. (I use *ako* to refer to collective, shared learning which includes far more than instruction and assessment: to me, *ako* is more than a combination of teaching and learning, it is a way of being, it is an attitude to knowledge construction.) My hopes were unrealistic.

Within the participant space, there were meaningful discussions as the year progressed, but the conversations in the Mentor Space faded. The collective focus shifted to the need to develop knowledge objects that could be of value as outputs from the community. In retrospect this was a time when the collective that had been operating within the Mentor Space could have begun to clarify its collective learning. We could not, because we continued to be focused on maintaining the Common Space, which by this stage had become dependent on leadership from the mentors and the project coordinator; the interventions were interesting and valuable, but the space became even more dependent on mentor leadership. Interesting conversations had faded in both spaces.

Some people have suggested that the model would have worked better if there had been more consistent mentoring, for example, with one mentor appointed full time. Perhaps this is so. Perhaps the instrumental learning of the participants would have been facilitated in ways that maintained momentum. We could look at this in another way, however. How would it have been if all of us had been focused on coming to understand more about the issues that drove the project as a whole? How would it have been if the mentors and the participants had been openly working on the same agenda? We might have identified key areas that needed to be written up in a final report, and small groups might have set out to investigate specific questions.

We might have learned to work as a self-organizing system where intervention was not needed to maintain involvement. The mentors and interested participants might have gained clarifying insights on mentoring. Groups of participants might have generated and shared insights they had

gained from the project. We, or at least I, lost momentum when we lost a collective purpose.

I no longer see myself as wanting to or being able to create an individual mark for myself. I do not claim the ideas I express as mine, rather I want them to emerge from my praxis.

> In the aftermath of the deconstruction of traditional metaphysics and epistemology, a new self emerges - like a phoenix from the ashes - a praxis-oriented self, defined by its communicative practices, oriented toward an understanding of itself in its discourse, its action, its being with others, and its experience of transcendence. (Schrag, 1997: 9)

I seek forms of research that recognise the complexity of self, challenge the notion of an autonomous self, and foster ways of learning which addressing emerging social issues. I turn to complexity theory for insight.

Self-organizing systems and the evolution of our future communities and societies

In this section I describe key features of self-organizing systems as they relate to the discussion above. My aim is to show that complexity theory, including self-organizing systems and the other aspects mentioned above, is an explanatory framework which might be used to envisage how social research might, in the future, be carried out collectively within e-communities.

Self-organizing systems rely on four core principles, each of which has been referred to in the writing above: the interaction of neighbours, the recognition of patterns, feedback mechanisms and indirect control (Johnson, 2001, p. 22). Within self-organizing systems the component parts may have quite different characteristics but they combine to form a whole, a system which is an entity in itself. The entity, the system, is dynamic: it changes and adapts to what is going on around it. I discuss the four principles listed above in terms of the way the mentor community and the participant community emerged during 2004.

Interaction between neighbours occurred openly and freely within both communities on the Interact LMS. For the mentors, face-to-face meetings added an extra dimension which, I suspect, enhanced the fluidity of our conversation. Non-participation in e-conversations is a form of communication under this analysis: the silences in both spaces (the non-participation of members) could be an indicators of a lack of engagement, or they could simply mean that the reader (as lurker) is interacting differently. A system needs to be concerned about the dulling effects of

(a) persistent non-interaction by some individuals, and
(b) situations where a lot of people do not interact. These are signs of malaise.

The recognition of patterns occurred throughout the interactions, everywhere. Each posting in a thread was linked to previous postings and to the experiences of participants. As communicative beings, teachers are skilled at identifying the patterns we see around us and sharing them with others. Individuals recognized patterns.

Feedback mechanisms were also evident, everywhere. Teachers are adept at sharing their insights and encouraging the kinds of activities that support effective learning spaces. Postings commonly indicated interest and curiosity in the content of other postings. There is a difficulty surrounding silence and the ways in which the author of a posting might interpret it: a lack of feedback kills conversations.

Indirect control was more apparent in the Mentor Space than in the Common Space. This was the key difference between the communities. Whereas the mentors tended to drive conversations themselves, the participants tended to wait and follow the lead of others. By echoing the behavioural patterns of traditional schooling, the mentor and participants bought into a hierarchical pedagogical model.

The notion of *"bottom up intelligence"* (Johnson, 2001, pp. 66-67, see appendix below) and *"problem solving by drawing on masses"* (ibid, p. 18, see below) are important here. The challenge is to question hierarchies and seek to understand how systems might become more self-organizing so that they might be more adaptive.

The implications of the ideas discussed above are far-reaching: I suggest that, if we wish to break the persistent patterns that emerge from factory models of schooling then we could well seek fresh insights from complexity theory. We could learn much by establishing purposive communities of

inquiry where authentic, current, social issues are addressed collectively by participants whose backgrounds and views are wildly different. Within a collective focused on a shared inquiry, the diversity of voices is important; the aim is not to settle on any particular ideology (or solution), nor on a particular approach to research; the aim is to seek many different kinds of approaches from many different sources in an ongoing attempt to find ways to address the shared social problem.

> Complex systems can …be studied from points of view which can be seen as complementary rather than competitive. The choice of theoretical approach depends mainly on the type of insight that is sought. (Skyttner, 1996, p. 26)

Complexity theory

This epistemological approach profoundly alters the ways in which the claims of traditional forms of educational research might be understood. This approach is consistent with but extends beyond the claims of both modern and post-modern theory: all forms of knowledge, all knowledge claims, are simply competing elements in the self-organizing system which is knowledge construction. Whether the claims are to do with the reality of the physical world, the interpretation of the social world, the need to change society, or the need to deconstruct language, they are no more than competing claims within a system which is constantly emerging and recreating itself. The claims which are the products of research are not controlled by any single, intelligent entity; they compete with each other as they seek to move from being localized arguments to being higher level insights which influence wider research communities. Under this construction of knowledge as a self-organizing system, theories emerge.

> *In the simplest terms, they [self-organizing systems] solve problems by drawing on masses of relatively stupid elements rather than a single, intelligent "executive branch." … The movement from low-level rules to higher-level sophistication is what we call emergence. (Johnson, 2001: 18)*

Knowledge as a self-organizing system

This kind of thinking recognizes that social knowledge is constantly evolving; we create new knowledge as we work together to address social issues; it recognizes that social problems which are sometimes called 'wicked problems' are never solved; *"at best they are only resolved - over and over again"* (Rittel & Webber, 1974, quoted in Skyttner, 1996: 248).

Further, this kind of thinking actively fosters diversity: complex systems rely on diversity; without diversity they atrophy and die. Davis et al. (2000, p. 115-116) discuss the importance of diversity: the dynamic variation within the system allows it to constantly change and adapt whether the system is biological (as in an individual person), social (as in a collective) or linguistic (as in knowledge construction). Complexity theorists oppose the notion that *"life is about maintaining balance"*; the simple act of walking requires one to deliberately put oneself off balance and to constantly re-adjust: movement requires a lack of balance. Variation is essential to enable creativity which is in turn necessary for evolution; for new possibilities to arise, we constantly need differences in opinion, in interest, in ability. Rather than seeking equilibrium, we could instead aspire to living comfortably with the notion of *unachievable equilibrium* (Morrison, 1998, p.5. Appendix 1, below, is a section of my thesis which discusses this construct).

The recognition of the need for diverse voices within a self-organizing system fundamentally challenges the validity of any knowledge which is constructed by small or elite groups. The understandings that emerge from diverse groups as they investigate a shared social concern are more holistic and resilient than those that emerge from isolated laboratories or hierarchical management structures. We know this already. We know that social problems require a different form of problem solving from problems of the physical world.

> *Planners and problem solvers dealing with large-scale societal problems have long been aware that their situations are quite different from those of ordinary scientists and engineers. Classical methods of science and engineering have little if any relevance to their work. … societal systems have no goals to be achieved, rather they have relations to be maintained. (Skyttner, 1996, p. 248)*

We know that social problems involve all of us and that they are to do with maintaining relationships. When the focus of our social arrangements is on fostering a shared

understanding or agreed position we destroy any celebration of diversity. Too little attention has been paid in the past to the patterns of relationships that might allow us to celebrate diversity, not just for its own sake, but as an essential element of our ongoing social development. Under this construction, all forms of patronage, colonization, paternalism (all forms of control based on ideological assumptions about what is good or right in the eyes of the speaker) are aberrations to be critiqued because of their tendency to attract conformity to rules set by others. Complexity theory does not suggest that no rules are possible (complex societies create governments to address this issue; most people agree to drive on the left hand side of the road) but complexity theory raises the fresh questions and insights into how patterns of behaviour might be sanctioned within diverse societies.

Toward collective social research

Collective social research focuses on issues that are currently of paramount social importance. To qualify, issues need to straddle the boundaries of existing social groups so that diverse ideas are called upon.

A collective is not a club for clones. A collective shares an interest in a common social issue. A collective values the different perspectives of its members. A collective acts as a complex, self-organizing system in that its members seek to *interact* in ways that might identify the new *patterns* which are *fed back* into the group in ways that are not overtly *controlled*. This iterative process generates shared understandings and findings, and it generates fresh approaches for addressing the social issue that unites them.

Collective social research disseminates its findings and claims as does any other research community: it generates both individual and collective publications.

Collective social research initiatives are not new: they exist in institutions which have a collective focus on a particular issue (consider the Frankfurt School and its contribution to critical theory, the Chicago School and its development of pragmatism, for example).

What is new, within this discussion, is, firstly, the way in which e-communities might be used to foster collective investigation into social issues. No longer do participants need to be brought together physically to take part in ongoing discussion. Secondly, by calling on complexity theory, I have argued that such e-communities need to be viewed as self-organizing systems in order to foster dynamic responsiveness to changing social conditions. Thirdly, I have suggested that the community within such an investigation needs to have diverse membership: this means that it needs to extend far beyond the academic staff of tertiary institutions, so that all those groups affected by the social issue are directly involved in the emerging conversations. This has wide ramifications: it recognises that the contribution of all members of the community will not be the same (an academic researcher will have different roles from an industrial leader or a student studying within the field in order to gain qualifications), and it consolidates relationships among, for example, academics, industrialists, policy makers, and students.

Teaching in tertiary as a topic for collective social research

The question of how to encourage tertiary scholars to focus on their teaching (when extrinsic rewards are clearly geared toward promoting research) is a social problem. Social problems are wicked problems: they cannot be solved, they simply need to be addressed, over and over again. As we (collectively and individually) address wicked problems we construct new knowledge; as we construct new knowledge we evolve, both individually and socially.

> **In a nutshell, what … overlapping and nested [ecological/complexity] theories suggest is that our (personal and collective) knowledge fits the world for the same reason that our lungs match the earth's atmosphere: They evolved and are evolving together. (Davis et al., 2000, p. 72)**

The challenge is to seek ways of fostering, together, the evolution of both individual and shared understandings of our social problems. If we were able to foster collective social research into wicked social problems, based on understandings of complexity theory, we would create the kind of democratic, self-organizing conditions which would contribute ongoing social development.

The T4T4T project created a space where this problem could be investigated: much has been learnt through the experience. Furthermore, much will have been reported within reports such as this: more would have been gained from the T4T4T investigation if the research outcomes, such as this report, had been able to be recycled within a self-organizing community of inquiry which did not have a fixed end point. Ongoing conversation and interaction is needed if collective research findings are to be reported collectively.

E-communities have an important role to play in the professional development of teacher in tertiary institutions. They are not, however, a golden bullet which will address the current imbalance in status between research and teaching nexus in our universities. No amount of encouragement, or surveillance, of teacher-work will address the imbalance that currently exists. If tertiary teachers are encouraged to become qualified, it will make little difference if academic status remains solely in the domain of research.

This paper has raised the possibility of addressing the key social issue of how to raise the quality of teaching in tertiary institutions into a substantive, collective research investigation. Researchers in this project would need to be qualified and skilled teachers who have a background in practitioner research so that they can investigate ways in which different strategies (such as action research) support ongoing development of teaching. Other participants in the project need to be involved both as students of teaching (gaining qualifications for their work in the project) and as pedagogical leaders in their faculties (gaining academic status for their scholarship and research related to teaching and learning in their respective fields).

Practitioner research into teaching at tertiary level is sadly lacking in areas other than education. I have suggested ways in which this might be addressed. The ways I have suggested are theoretically sound, pedagogically sound, and they call on emerging research practices.

Action is needed at the level of national policy to allow teaching to gain status within the academy: this means status must be given to skilled teachers who are able to support the teaching and learning of others. E-communities provide an opportunity to implement research techniques, such as collaborative social research based on complexity theory, which capitalize on emerging knowledge within communities and turn it into educational theory which is grounded in praxis, bottom-up, and capable of addressing 'wicked social problems'.

Appendix 1 Complexity theory and unachievable equilibrium

In the text of this thesis I try to capture something of the shift in world view from the dialectical logic of the nineteenth century to the logic of self-organizing systems that began to emerge in the latter part of the twentieth century. Postmodern writing has made a break with that dialectic logic. Perhaps it is helpful to think of postmodernism and complexity theory as different branches of the same river: their separation created an island which acted as a theoretical division between the flows of the physical sciences and the social sciences. Perhaps there is value in considering how similar they are, perhaps the braided river is now a better image: theories and ideas diverge and come together without the need to claim grand, universal truths. Theory emerges in practice, always based on past theory, always reacting to current conditions, but never predictable, always fresh.

The possible consequences of this approach are revolutionary; if we, as educators came to think differently about some issue then we would come to act differently, and our social organization would change; change, if there be change, flows from a collective change in understanding and is therefore a stable form of change. For those who despair at the level of paperwork that has crept into educational management, and the lack of creative opportunities for teachers, and also for those who challenge the power of global organizations, Johnson offers a particularly attractive proposition:

> …we will find ourselves relying more and more on the logic of these systems - both in corporate America where "bottom up intelligence" has started to replace "quality management" as the mantra of the day, and in the radical, antiglobalisation movements who explicitly model their pacemakerless, distributed organisations after [*self-organising systems*]. (Johnson, 2001, p. 66-67, italics added)

Yet caution is needed. Bottom up intelligence may be the mantra of the day, but this is not to say that quality management is to be forgotten: it is all a question of balance, or emphasis, of perspective: Manual De Landa illustrates this when he distinguishes meshworks (or self-organizing markets) from hierarchies (or bureaucracies) and notes that these things should be understood in purely relative terms.

> … the solution is not simply to begin adding meshwork components to the mix. Indeed, one must resist the temptation to make hierarchies into villains and meshworks into heroes … because … they are constantly turning into one another, [and] because in real life we find only mixtures and hybrids, and the properties of these cannot be established through theory alone but demand concrete experimentation. (De Landa, n.d., paragraph 19)

To think of aspects of education as complex, adaptive systems suggests, therefore, that solutions to problems may not be found, that, instead we need to live within situations where we are constantly needing to make fresh decisions in relation to changing circumstances.

> Systems, however defined are complex, unstable, emergent, adaptive, dynamical and - significantly for our purposes - changing. In human terms, disequilibrium can be accounted for by intentionality, competition, … intelligence, creativity, the independent behaviours of acting individuals, etc. It is a requirement that a system be perpetually out of balance …; order emerges as the system (however defined, from ant colonies to complex economic practices) strives for *unachievable equilibrium*. Complex adaptive systems are constantly modifying and rearranging their building blocks in the light of predication, experience and learning …. They display 'perpetual novelty' …. Importantly … in complexity theory organisms demonstrate the propensity for problem solving approaches …. Self-organisation is the order of the day. (Morrison, 1998, p. 5, italics added)

The models I develop within the body of this thesis are all aimed at finding some form of balance between competing ways of viewing issues: they each seek to understand how we might find momentary balance within the *unachievable equilibrium* of complex systems.

(Mayo, 2003, p. 26-27)

Appendix 2 Praxitioner, praxitioner research, praxitioner collective

This material refers to a praxitioner in the context of teaching and teacher education. The arguments apply equally to other practitioner endeavours.

I argue that it is useful to draw a distinction between the word *practitioner* and the word *praxitioner*. These are not labels to put on people; they refer to distinct activities. *Practitioner* applies to any teacher activity. *Praxitioner* applies only to those activities where the teacher recognises the political nature of praxis, and the potential for collective praxis to influence society in the interests of social justice.

Praxitioner research would, under this emerging definition, suggest that the researcher, in this case a teacher or teacher educator, would be researching his/her own practice, would be seeking to understand the ways in which practice affects social outcomes and perpetuates or disrupts existing patterns of inequities or injustice. Praxitioner research cannot be carried out alone because the construction of meaning is a collective activity: it involves interaction with others, including students and other colleagues who are researchers and/or teachers. I seek ways in which current practices might enable *praxitioner research* to become recognised as a valid educational practice in routine teaching.

I distinguish, thirdly, the notion of a *praxitioner collective*. Within a praxitioner collective or network, there is a pragmatic intent to bring differing perspectives together within one ongoing discussion around an important issue of concern to the community within which the group operates. The issue (which I come to refer to, inspired by Latour (1993), as an *emerging object*, but later argue is an emerging discourse) acts as a magnet which attracts different perspectives. The group, once established, has a life of its own in that it continues beyond the completion of any specific project, and it survives the passing on of any particular individual. In this sense, a praxitioner collective is a self-organizing system. I argue the importance of *paralogy* (in the sense that Lyotard uses the word, the search for *dissensus* as opposed to consensus) within a praxitioner collective: oppositional voices are essential within a self-organising collective. …

The bringing together of voices of difference over issues of shared concern is a profoundly democratic process. It is one that I suggest might be echoed more effectively throughout education and society. … There are, for example, paralogical classrooms where the teachers and the students work together, celebrating differences in order to learn, together as whānau, how to be creative in the face of social problems, how to build aroha into their daily work. Not all classrooms are like this, not all would aspire to be, but by naming an ideal it becomes possible to wonder how that ideal might be achieved, and in which situations it might be attractive or unattractive, and to whom, and who would benefit.

The ideal of a classroom as a *praxitioner collective* would require, for example, that we identify ways in which individual voices might become more articulate and more political, and democratic processes less constrained by structure. Theory surrounding self-organizing systems challenges current assumptions about the importance of hierarchical top-down decision-making structures and foreshadows the possibility of a bottom-up revolution in systems thinking. I suggest that alterations to praxis can influence teaching practices, understandings about learning, institutional organization, and social justice within society. This thesis argues that, by fostering collective praxis within teacher education, we may be able to work toward constructing a more socially just future.

(Mayo 2003, pp. 15-17)

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Endnotes

I have used endnotes as a tool which allows the reader to gain an understanding of the ways in which I have used particular terms. Within eclectic communities it is not realistic to expect that all readers will have an understanding of the vocabularies that are important within technical discussions. The endnotes are designed to address this issue. Within an e-community glosses such as these would be developed within the community and used as resources or points of reference.

[i] Gloss on collective

> COLLECTIVE Term used to describe a group of people working together for mutual support or advantage (and a key feature of socialist societies), the contemporary feminist use … first appeared in the 1970s. Women rejected the hierarchical, authoritarian and undemocratic manner in which male-dominated organisations were usually run. (Gamble 2000: 206)

While there is shared interest or mutual support within a collective in the sense in which I use it, there is no assumption that views will converge: collective research is different from collaborative or co-operative research where people work together to produce shared outcomes. A collective focuses on a shared issue: it may generate wildly different approaches to researching or addressing the issue, but it values these differences because they open up new ways of addressing the central concern or research issue of the collective endeavour.

[ii] Gloss on community of inquiry and the role of conversation

A community of inquiry is an extension of both a community of learning (where the focus is on individual learning) and a community of practice (where the focus surrounds a practical endeavour). Dewey proposed that a classroom might operate as a community of inquiry.

> Dewey's idea that a classroom should be a "community of inquiry" is a promising educational approach. The "community of inquiry" approach allows children to enrich and use their experience on a variety of levels. Most importantly, it encourages the development and use of imagination as a prerequisite to higher-order cognitive skills. (Holder, 1995, p. 192)

Within a community of inquiry, participants who share a common question or concern work together to address that concern; the focus is therefore research oriented with participants engaged in learning through praxis (see gloss on praxis, below). Lipman (1988) writes about the importance of conversation and varied participation within such communities; he also highlights the need to unduly favour neither individualism nor collectivism and suggests these are ideas of great importance.

> In the past few decades, there has been a growing sense in some quarters, such as political science, sociology, social psychology, and philosophy, that some significant shifts in cultural emphasis are taking place. Instead of the freezing of social groups into antagonistic positions so that little can be done but bombard each other with arguments, there is a developing sense of the merits of conversation and dialogue before the fixed positions can congeal. Instead of democratic practice being the annual pull of a lever in a ballot box, there is an increasing emphasis on participation and community at a variety of grass-roots levels, thereby avoiding the noxious extremes of rampant individualism and collectivism. The community of inquiry will perhaps be seen more and more as not simply [a] component, but as a paradigm of the process and a specimen of its benefits. (Lipman, 1988, p. 42, italics added)

The importance of ongoing conversation is highlighted.

> …conversation (as every diplomat and labour-management negotiator knows) is the minimal condition for civility. It is when conversation stops that we must prepare) for the worst; it is when conversation starts again that we can breathe easier and begin to hope again. (ibid, p. 48-49)

[iii] Gloss on pragmatism

Pragmatism refers to American pragmatism, with its origins in James, Peirce, and Dewey and the Chicago School (Audi, 1995: 638), and to more recent incarnations of this construct which are emerging within post-structural theory. Pragmatic research investigates the likely consequences of actions and so looks toward future events. Pragmatic forms of research are more interested in addressing social issues than in describing current social practices.

> Pragmatism is a discourse that attempts to bridge where we are now with where we might end up. (Cherryholmes, 1999: 3)

Fraser (1997) devotes a chapter to the choice: Structuralism or Pragmatics?

> Unlike the structuralist approach, the pragmatics view studies language as a social practice in social context. This model takes discourses, not structures, as its object. Discourses are historically specific, socially situated, signifying practices. They are the communicative frames in which speakers interact by exchanging speech acts. Yet discourses are themselves set within social institutions and action contexts. Thus the concept of a discourse links the study of language to the study of society. (Fraser, 1997: 160)

[iv] Gloss on praxis

Praxis is a term which undermines any barriers that might exist between theory and practice and at the same time it suggests that action and words are always politically geared toward fostering social justice. Neither pure theory (which is not linked to action) nor pure action (instrumental or routine action) are included:

> [b]oth the project of pure theory which makes claims for a value-neutral standpoint, and the purely instrumentalist understanding of practice, as itself shorn of discernment and insight, are jettisoned. (Schrag, on praxis, in Audi 1995: 639)

Praxis is a contested term; I have chosen it because it carries with it the idea of some emancipatory ideal connected to social justice. It carries both action and word: in Freire's terms it is not *activism*, and it is not *verbalism* (Freire, 1972: 60). It connotes an ongoing responsiveness to the current situation rather than to some idealised version of reality. It also connotes revolutionary action attacking the forces that militate against emancipation. Praxis as a term has a long tradition but …

> In more recent times the notion of praxis has played a prominent role in the formation of the school of critical theory in which the performatives of praxis are seen to be more directly associated with the entwined phenomena of discourse, communication, and social practices. (Schrag, on pragmatism, in Audi 1995: 639)

[v] A reflective comment

It may be helpful to think less about individual people within the Mentor Space, and more about patterns within the discourses, the actions, the relationships and the ways in which these three systems relate to each other and thereby create a transcendent system, the community. This idea is too deep to discuss here. I include it because it has flowed from my attempt to explain how an individual self need not be thought of as a separate, autonomous entity: I know my *self* through my speaking (discourses - world of language), my doing (physical body as part of a physical world), my relating (social world), and my awareness of larger social systems of which I am a part (transcendence, complex understandings of nested, ecological systems as self-organizing) . I know my self through my embodied, situated praxis, not as an individual who is separate from the rest of the world.