

Time Travel through the Polytechnic* to University Nexus: From Heartfelt Difficulties to New Possibilities

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Abstract

In this research, we begin with the problems academics experience as they navigate their way towards new ways of working associated with the recently emerged University of Technology sector. Using change laboratories' methodology, academics are taken through successive problem solving and solution developing workshops. This involves them, firstly, reflecting on past and current problematic experiences and issues in their daily lives. These experiences are then mediated through the application of Activity Theory principles so that problems are understood in a more systematic and related manner. In so doing, the academics collaboratively come to understand the contradictions which underpin current problems in working life and attempt to open up possibilities for future changes and improvements in the structure and purpose of the university. Even though a number of problems and potential resolutions are discussed in this research, this is not the focus of the article, and there are no grand claims being made about problems and their possible future solutions. Rather, the article aims to highlight how a change laboratory methodology can help academic staff develop more systematic understandings of problems emerging in universities in times of change. The focus is thus more on the learning opportunities afforded participants within the laboratory, both now and for the future.

Keywords: Change Laboratory, Activity Theory, University of Technology

* In South Africa the previous Technikons were similar to the more internationally recognised polytechnics

Introduction

The research reported in this paper was conducted within a newly developed University of Technology (UoT). The UoTs in South Africa emerged from the previously more vocationally orientated higher technical institutes or Technikons. Powell & McKenna (2009) contended that the transition from Technikon to a UoT could be seen as a cosmetic marketing plan rather than a fundamental identity change, as many of the previous old Technikon practices still persisted. Kraak (2009) further argued that UoTs have been largely left to chart their own development, and much of this has involved emulating the more traditional universities. Consequently, staff and systems at the UoTs often lacked the resources to take on the new, more academically focused initiatives.

In this research, academic staff at a UoT reflect on their learnings within a collaborative problem-posing and solution seeking series of change laboratory (CL) workshops. The particular problems posed in the workshops revolved around the conditions of their working lives. These manifested as, firstly, top-down decision making and the overtly bureaucratic nature of the university, and secondly as academics having to fulfil multiple and often competing roles and hence losing a sense of purpose, resulting in feelings of despair. Some of these new roles were a direct result of academic drift; for example, such as taking on the mantle of research and higher degrees while simultaneously attempting to work closely with industry. It should be noted, however, that academic work worldwide is often in flux, with new roles being thrust at them under conditions of rapid societal and academic change (Zukas & Malcolm 2019). As the authors remind us, not all these roles (e.g. community development) are officially recognized by management as part of the workload, often resulting in some staff being overburdened with tasks.

Academic staff's reflections are guided by both the issues they raise and the use of structured interventions. A significant structured intervention within the workshops was the dynamic activity system through which participants can elucidate how the university operates, with what resources and for which purpose (Figure 3). When analysed in this way, perceived, often individually experienced difficulties can be understood more systematically as arising from contradictions within the system (Virkkunen & Newnham 2013).

Previous research using change laboratories in higher education has been mostly issue-focused on teaching and curriculum rather than being about

more general difficulties in working life. For example, Fang (2016) used the methodology to examine staff's resistance/difficulties in taking up community engagement projects. Englund (2018) was interested in the issues staff experienced in working collaboratively across different but related health programmes. This research however, has a wider focus, examining more generally challenges staff encounter in navigating changes in working life as the UoT emerges from the previous more technically-orientated Technikon. This focus is in keeping with Bligh and Flood's (2015) suggestion that change laboratories, as well as being single issue focused, could also be useful in working with broader strategic change issues in universities.

While much time was spent on the present university activity system, academics also performed a detailed analysis of the university activity system of the past. The aim was to better understand current challenges as emanating from deep-seated, often historically embedded, contradictions in the system. Understanding, however, is not enough. There needs to be the development of future practical actions through which participants can overcome their challenges, in other words an activity system of the future. Hence, the title refers to 'time travel', a term borrowed from Engeström (2007: 374) in his description of the temporal nature (past, present and possible futures) of participants' reflection and learning within the change laboratory.

The article thus aims to highlight how a change laboratory methodology can help academic staff develop more systematic understandings of problems emerging in universities in times of change. Moreover, through engaging in the change laboratory, academics are assisted in crafting possible future practical resolutions for a better university, or what Sannino & Engeström (2017) refer to as possibility knowledge. As such, the change laboratory is a learning laboratory for the participants engaged within it, both now and for the future (Sannino 2015).

Background of the Study

In 2001, the National Plan for Higher Education (NPHE) in South Africa proposed a redress of the higher education landscape in order to achieve equality between historically white and non-white institutions (Department of Higher Education & Training 2001). Consequently, and commencing from 2002, the government suggested the merging of a number of institutions to reduce the number of higher institutions without decreasing the number of sites

of delivery. The Durban University of Technology (DUT), where this research was conducted, was the result of one of the first mergers. Though at the time (2002) this was seen as extremely problematic, leading to retrenchments and financial difficulties amongst other issues (IOL 2002), the merger was not raised in the CL and is not discussed further here.

At present there are 26 higher education institutions namely, thirteen research-intensive universities, six comprehensive universities (combination of a former university and a Technikon) and seven Universities of Technology (UoTs), which provide vocational-based and technology driven programmes (Council on Higher Education 2004; Department of Higher Education & Training 2013). This higher education classification critically links to the earlier work of Winberg (2005) where she elucidates the three chronotopes that emerged from the genealogy of the changes of the previous technical college system to the current UoT system.

According to Winberg (2005), the first chronotope emerged from the Colleges of Advanced Technical Education (CATEs), which focused on the educating students to meet the needs of industry. The author pointed out that the shortages of ‘technically skilled personal’ to meet the needs of commerce and industry motivated the change of the CATE designation to that of the ‘Technikon’. Lecturers working in Technikons therefore identified themselves as practice and professional-based experts. Their limited academic experiences in applying sound pedagogical practices, however, adversely affected the development of the Technikon curriculum. In the second chronotype, she elaborated on the ‘academic drift’ of Technikons from professional practice towards theory and research to better emulate universities. This strong academic drive was at odds with the prior culture of Technikons. The thrust of Technikons as UoTs is typified by Winberg (2005: 196) as having the potential for chronotype three. In this chronotype, UoTs had to rediscover ‘technological education’ by developing students as independent, creative and responsible thinkers. Universities of Technology are then to be characterised by a focus on service to industry and transfer of technology, as well as the preparation of a new generation of critical thinking citizens and lifelong learners.

At DUT, where this research was conducted, chronotype three had a particular resonance, and was even a taken a further step. The innovative and far reaching General Education (GenEd) initiative at DUT was introduced as part of its curriculum transformation due to ‘...a demand that students must graduate with skills, knowledge, attributes and values that will enable them to

participate fully both as citizens and professionals...’ within the work place as well as in society (DUT 2015:). Consequently, new course content was sought to prepare for employment and for ‘...critical citizenship, particularly in an emergent and still fragile democracy.’ (DUT 2015: 1). Early in the planning of GenEd, DUT identified seven programme-embedded themes, namely:

- 1) Environmental Sustainability;
- 2) History, Politics, Economics and Philosophical systems;
- 3) Culture and Society;
- 4) Work Preparedness;
- 5) Entrepreneurship;
- 6) Personal Development; and
- 7) Health and Wellness (Durban University of Technology 2015: 2).

General Education modules on these topics were developed centrally, which were then added to the curriculum across programmes within the university. In addition, faculty staff were expected to design their curricula to include and develop these themes further.

However, as White, Carvalho & Riordan (2011) remind us, even though the UoT are in a state of flux, a non-flexible and hierarchal system from the past continues where authority is ultimately entrusted to the Vice Chancellor (VC) and senior management. Thus, although staff were broadly supportive of the General Education initiative, actually how it was to be designed and implemented, was not fully discussed with the academic staff. This problem may also arise with other initiatives, such as increasing research and innovation within the university.

Methodology

The CL method always begins with an organisational issue that manifests as a persuasive and often insurmountable difficulty (Virkkunen & Newnham 2013), which in our case is the problematic working conditions for academic staff at a UoT. The aim of the CL is then to work with this difficulty and attempt to come up with concrete ideas that can help resolve the initial problem. In so doing, participants within the CL spend much time on both identifying and understanding the problem, both as it manifests in the present and also historically (Virkkunen & Newnham 2013). The problem identification itself

provides the initial stimulus and motivation for staff as they start to grapple with and explore problems in their working lives. This is, in turn, the first stage of the expansive learning cycle academics undergo in the CL, as is shown in Figure 1. Although Figure 1 shows a sequence, it rarely proceeds in a linear fashion. Participants, for example, may raise new concepts for future work early on in the sessions, which are then picked up again in later workshops.

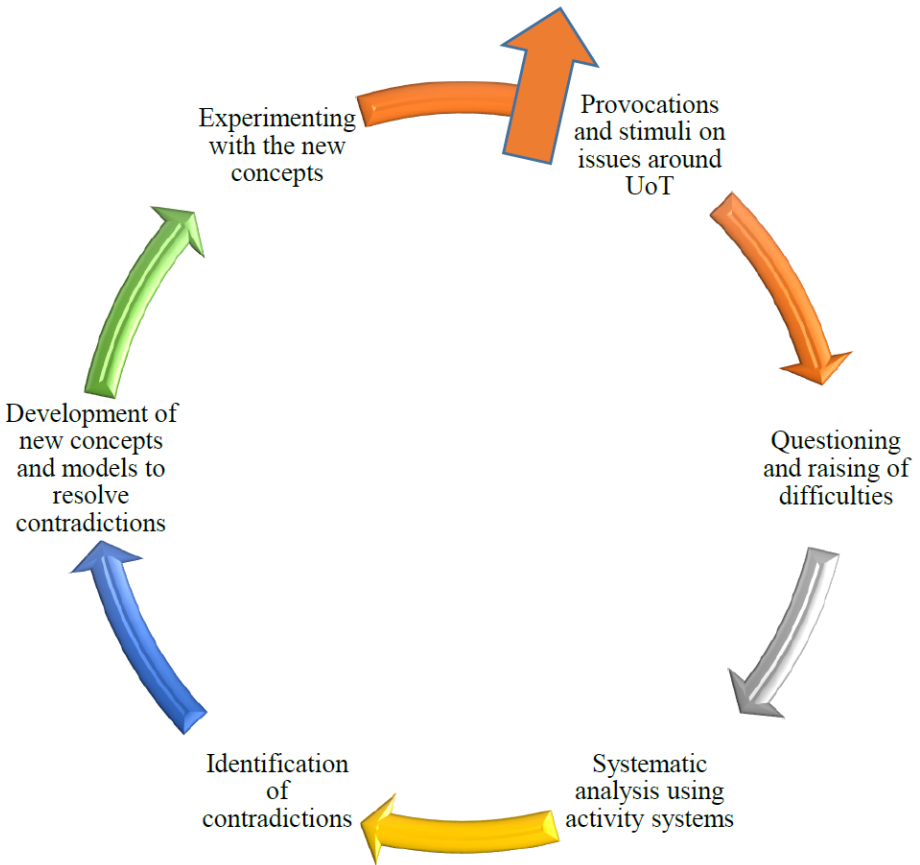


Figure 1: The expansive learning cycle
Adapted from Virkkunen & Newnham (2013).

Expansive learning forms the core underpinning learning theory for CL (Sannino & Engeström 2017). In expansive learning (Figure 1), participants begin with subjectively experienced conflicts and problems that are then collectively recontextualised as systemic contradictions within the broader university system. Participants then focus on the generation of new concepts, processes or systems that have the potential to bridge between and possibly resolve these contradictory elements within the organisation. In so doing, participants move into a zone of proximal development (ZPD) in which they attempt to model a new and improved version of the currently problematic features of the organization (Engeström Sannino & Virkkunen 2014; Virkkunen & Newnham 2013).

Concepts such as stimulation/ double stimulation and the ZPD were originally coined by Lev Vygotsky in his seminal learning theory work in the 1930's. Current Activity Learning Theory has adapted these concepts to organisational learning and change. For instance, in Vygotsky's work the ZPD was that developmental space between what a child can accomplish unaided and what can be accomplished with assistance of a more competent other (Vygostky 1978). In the current Activity Theory system, the ZPD is that space between the individually experienced present and the collectively generated possible future (Sannino & Engeström 2017).

The CL workshops involve collaborative practitioner activity to develop new ways of thinking that can be of benefit to organisations. However, the generation of these ideas on their own is often insufficient to drive organisational change. Rather, they need to be presented to, and hopefully taken up by, a broader management body (Virkkunen & Newnham 2013). The model is then, ideally, experimented with externally through presenting emergent ideas for improvement to a management grouping.

Notably, CL employs a number of principles and related tools to help participants move from experiences of difficulty within the ZPD to more collective and concrete possibilities of overcoming such difficulties. These form 'specific methodological steps' (Engeström, Sannino & Virkkunen 2014: 123) which support the participants' expansive learning within the CL. These steps can also be seen in the expansive learning cycle shown in Figure 1 and are outlined in more detail below. The steps also provide the frame for structuring the data in the results section.

Primary and Secondary Stimuli, Conflict of Motives

The primary stimulus (the first methodological step) for the CL is the recogni-

tion, questioning and discussion of the problem with the CL participants (Virkkunen & Newnham 2013). Conflicts of motives arise where staff encounter contradictory objects in their work practices, pulling them in different directions, and choices must be made. They are also indicative of participants experiencing a crisis, and are typical of situations requiring change (Sannino & Engeström 2017). Participants typically employ emotive language or strong metaphors to represent such conflicts, for example describing their feelings about work as being akin to ‘schizophrenia’.

In addition, participants in the CL may collectively come up with secondary stimuli, which can help them work through the problems and conflicts raised in the workshops. In turn, this can help them gain greater control of the situation (Engeström, Sannino & Virkkunen 2014). For example, where participants identify overwork as a problem, they may introduce a better workload model as a possible way forward. Alternatively, the facilitator can provide thinking tools, which constitute methodological steps in the CL process, to help participants break the deadlock of the initial problem.

Activity System Diagrams

As academics discuss current issues they deal with on a day-to-day basis in the university, these can be analysed on an activity system organisational diagram, in order to ‘clarify, elucidate and essentialise’ the issues emerging (Engeström 2015). The activity system triangular diagram depicts the organisation under the following inter-connected elements: Subject, tools, object, rules, divisions of labour (DoL), community and outcome (see Figure 3). The nodal point of the activity system, the object of the activity in question, is what participants understand as the focus of their work, or what they are working towards. This object is indefinite and its final shape, which is the outcome of the university system, depends on the combined and often contradictory actions of the other elements of the system (Sannino & Engeström 2017). These other elements include:

- The participants or ‘subjects’ of the system with their skills and interests;
- The ‘tools’ available to participants in order for them to successfully work on the object;
- The larger ‘community’ of people and organisations, which influences the emerging object;

- The overt and tacit ‘rules’, which determine how everybody in the activity system of the university should operate and;
- The ‘divisions of labour’ (DoL), which refer to the ways that people are assigned different roles in working on the object – these can be hierarchical roles such as management or specialist role such as a specific lecturer’s knowledge of their field.

In addition, in order to systemise and analyse contradictions, and to get a deeper understanding of their origins and possible ways to resolve them, the trajectory of the UoT is also examined by the participants over time. Here, the elements of the activity system are placed onto a historical change grid (see Table 2), with four intervals from the prior Technikon (about 2000) until the present. Academics collectively filled this grid in and analysed the elements in terms of what had changed the most/least and so what may have contributed historically to the contradictions emerging within the current activity. Historicity, understanding the present formations through uncovering their historical antecedents, is a characteristic of Activity Theory analysis (Engeström 2001).

Four Field Quadrants

The ZPD in the change laboratory is typically represented as a quadrant or four-field diagram (Sannino & Engeström 2017). Each main axis highlights a significant contradictory dimension evident in the current activity system. These four-fields provide a vital thinking tool in order that staff can envision possible futures. Such futures often accrete around a new concept or ‘germ cell’ (detailed below) that attempts to bridge between contradictory elements. The ZPD is thus closely linked to both the conceptual tool of identifying contradictions and developing bridging germ cells. Whereas the activity system diagram (Figure 3) highlights a number of organisational difficulties at different locations, the four-field (Figure 2) highlights main contradictions and a possible trajectory for a new, more advanced object of the activity system.

Germ Cells

Ideas that bridge between main, identified contradictions and serve as an ini-

tial, abstract construct that staff develop further and concretise are characterised as germ cells. They are typically introduced by the CL participants as they come to understand the main contradictions underpinning their day-to-day difficulties. The germ cell is a unity of opposites that emerges in a process of conducting the laboratory (Virkkunen & Newnham 2013). It attempts to bring these opposites together into a new, future-looking concept or process. Sometimes these are new tools to help us achieve a desirable and better vision of the university, or may even be a new focus that allows us to resolve the emergent conflicts and contradictions. The germ cell points towards the future trajectory of the activity system (Sannino & Engeström 2017). However, it is initially not fully formed, and requires greater linkages to other concepts before it can successfully be ‘concretised’ and rolled out in the institution.

Structure and Method of the Workshops

In January 2018 the lead author initiated an NRF funded project into the identity of UoT in South Africa and sought partners from other universities. In October 2018 a partnership was set up with the university discussed here through the second author of the article, and permissions and ethical clearance were sought and granted.

According to Virkkunen and Newnham (2013), a key principle in selecting participants for a CL is, firstly, that they share a common object (in our case the problem of university identity) and secondly that they show commitment to working towards change. To this end, the partner identified the Faculties of Health Sciences and Arts as faculties that had previously shown an interest in the trajectory of the emerging university. Volunteers with lengthy teaching experience in the institution, an interest in confronting current problems and proposing changes, and a commitment to attend sequential workshops were sought from these two faculties. Only seven academics from the Faculty of Health Sciences indicated an interest in the project, and they were selected as the research participants.

Furthermore, Virkkunen and Newnham (2013) suggest that the participants should belong to some form of common unit (for example a faculty) but that there should also be some diversity within the unit. In fact, the academics in this study were drawn from different departments (Radiography, Dental Technology, Basic Medical Sciences, Homoeopathy, Environmental Health)

within the Faculty of Health Sciences, and included a spread of departmental heads, senior lecturers and lecturers.

It should be noted that what transpired in the workshops reflected the experiences of academics within this particular faculty, and not necessarily the university as a whole. However, as is described later in the article, the University Institutional Forum, which represents a broader spectrum of role players in the university, concurred with the arguments put forward by the Health academics.

The academics participated in seven consecutive CL workshops between 20 January and 2 August 2019. The work presented here is a reflective account from the facilitator and Health academics of their learning and development within the workshops. Each workshop lasted approximately 2.5 hours. Ideally the workshops should have been held at least twice-monthly to ensure continuity (Virkkunen & Newnham 2013). As the university experienced severe student unrest during this period, and was frequently closed, there was sometimes a lengthy period between workshops. Fortunately, video footage and newsprints from earlier workshops provided sufficient reminders for continuity of thought and discussions. The final ‘workshop’ was in fact a session where the whole group went on a two-day retreat to consolidate the process and findings. Writing up collaboratively enabled the whole group to reflect on their learning, and what more was needed to be done.

As is typical in the CL process each workshop session was video recorded and key moments selected by the facilitator (Virkkunen & Newnham 2013). These key moments were used as stimuli and discussion guides for the subsequent sessions. ‘Key moments’ are typically where staff express difficulties and conflicts in their daily work, or suggest ways in which the university could function better. In addition, diagrams which served to concretise or partially analyse proceedings (for example, activity system triangles) also served as linking mechanisms between workshop sessions. During the workshops themselves, the proceedings were recorded onto three screens of newsprint by a scribe. The mirror screen showed information brought into the workshop, such as exemplars of participants’ daily experiences and videoed interviews, amongst others. The ideas screen showed collaboratively agreed upon themes emerging in the workshops; for example, the main difficulties experienced by staff or ideas that may help them to work through problems.

Table 1: Plans for sequential workshops in examining Technikon/UoT nexus.

Session (date in 2019)	Issues raised/ mirror data	Secondary stimuli (thinking tools used)	Ideas generated
1 21 January	Top down nature of decision making. Difficulty of resolving both technical and holistic (general education) teaching.	Mostly primary stimuli of conflicts experienced.	Difficulty, despair.
2 23 January	Do we respond to work or to society generally? Do we research or teach? Multiplicity of objects.	Main contradictions represented on four-field; Current activity system and contradictions.	Potential focus for the workshops → Possibility of 'expanded new professional graduate' as a future focus.
3 12 April	Who assists our development and do we have time? Are our leaders the right ones? Is there a loss of trust in management?	Adjusted activity system and contradictions. Change grid of the past.	Staff begin to look at different forms of leadership.
4 24 May	Multiple objects but limited resources. Changing VCs but consistent top-down management.	Change grid of the past. Adjusted activity system of the present.	Hierarchy and resources remain intact, but demands on staff change dramatically, creating major contradictions.
5 12 June	Multiple objects.	Adjusted present activity system.	Flexible, x-disciplinary, practice-based, enquiry-led research as a focus and return to the 'new professional' graduate as new object to resolve contradictions.
6 1 August	HR/finance tail wagging the academic dog. Multiple objects but limited resources raised again.	Management (institutional forum) presentation planning.	More contributory faculty meetings to flatten hierarchy. HR & finance to support common object of academic work.
7 20 - 22 September	Consolidating main themes into an article.	Writing workshop.	-

The model/ vision screen reflected the development of the activity system triangle of the university, and indicated some of the main contradictions emerging within and between the different elements (Figure 3). The role of the screens was twofold; to remind staff of the developments in the workshop and to signal a move from empirical events and experiences towards a more abstract and systematic understanding of them. Together the video presentations and three screens created a rich and continuously developing surrounding to stimulate discussion in the CL workshops.

In addition, each workshop was planned broadly following the expansive learning cycle (Figure 1). The first workshop aimed to provoke academics to confront their own work in the UoT, and to surface problems in their day-to-day work. To this end, the facilitator sourced an interview with the UoT national chair, in which the loss of direction was highlighted and a videoed interview with the previous VC on possible and future trajectories for the university. Academics were also encouraged to bring artefacts which illustrated difficulties experienced (for example, an academic showcased an article she had penned on the schizoid nature of UoT academics). Follow-up workshops progressively moved from lived experiences through to the analysis and identification of contradictions, including their historical roots. This followed Engeström's ideal-type sequence of actions (Engeström, Sannino & Virkkunen 2014), which is indicated in Figure 1. The final workshops attempted to bring together contradictory elements into new conceptual possibilities or germ cells, and to experiment with these new concepts outside of the CL in a management forum. The sequence is shown in Table 1.

Results and Discussion

Conflict of Motives

The prior focus of the Technikon was on producing graduates with a strong technical ability, who would be suitable for employment in their relevant industries. The academics in the CL suggested that this focus currently distinguished the UoT curriculum from that of the more traditional universities:

... we're working towards producing young professionals, that have a sound technical and professional academic knowledge base, so that they can go into the world and be employed, so it's not pure academic like at a traditional university.

Time Travel through the Polytechnic to University Nexus

General Education was introduced into the UoT to expand on what was previously a more technically-loaded or craft-oriented curriculum in order to develop 'holistic' students as graduates, with more of a reflective social, political and historical background:

It was a shift from craft knowledge to a more holistic student ...it includes not just the technical but brings in dispositions and ways of being as well

Numerous challenges, however, arose upon implementation. The original utopian idea of developing personal and societal skills to serve and transform society had been somewhat obscured by challenges such as full time equivalent (FTE) allocations (i.e. numbers of classes staff have to teach), timetabling and human resource constraints:

We've got to teach them the knowledge, we've got to teach them a vocation, now we've got to teach them GenEd as well. So what used to be just the vocational, how to do, has now been doubled, trebled and so the weight on the staff ... the GenEd, we can and we must do and we will do brilliantly but for all of us to be doing all of that is enough to drive us to another place

Apart from the introduction of General Education, another dominant theme was that of the nature of management in the UoT. Firstly, each new VC brought in a vision, a new '*way of how things should be done*', which was delivered through a top-down approach. Staff believed that visionary, guiding leadership was important, but that it needed to co-exist with a more flattened, collaborative and empowering process as well. Secondly, current leaders and managers were perceived as being largely disconnected from the university classroom:

... the people that mostly are in management haven't been in a classroom for years but they take the decisions...you know what we have in the university is a system of hierarchical top management taking decision

Quite early on, in the second session, academics were able to describe some of

the major conflicts experienced in their day to day work on a fourfield diagram (Figure 2). When viewed in this way, the major conflicts can be seen relationally with the possibility for a new university of the future identified in the top right quadrant. This type of future university would operate under a collaborative and flexible system in order to produce an expanded professional (graduates with both technical and more holistic skills).

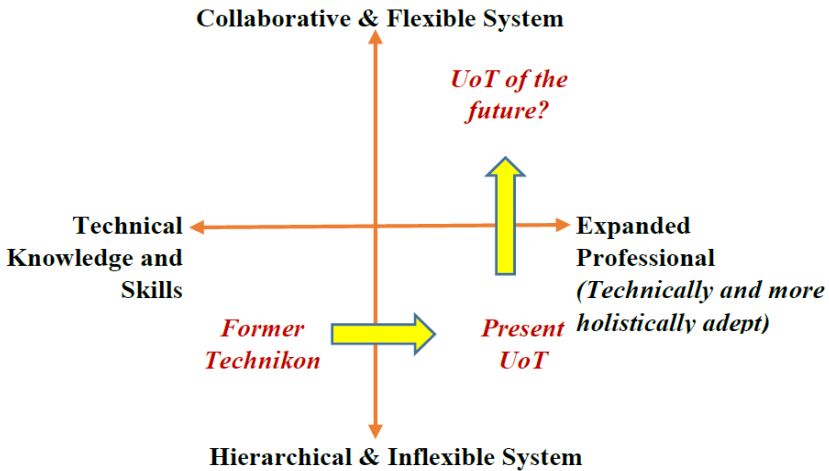


Figure 2: A Four-field view of the initial identification of the main constraints and enablements in a UoT

One of the main conflicts identified in the workshops centred on academics' qualifications. Previously, academic staff were appointed to teach vocation-specific diplomas and hence were experienced professionals of a particular vocation, often with lower level qualifications. This industry and professional experience and expertise drove quality teaching and training in the past. With the transition to a modern UoT, there was a shift in recruitment policy to appoint more academically qualified staff who may, however, lack significant work experience:

... Master's and PhD qualified staff are appointed in the various departments instead of those with a 'lesser' qualification but with tons of industry experience.

At the same time, the current academic staff were pressurised to acquire postgraduate qualifications aligned with the South Africa Council on Higher Education's requirements to deliver university degrees, as well as to conduct research in their academic fields. Furthermore, academics reported that student profiles have changed. Previous students were academically better prepared and often more career-orientated and motivated than current students, who thus required significant academic support, including induction into their field of study.

In response to meeting the needs of government and society, academics were required to include knowledge of the fourth industrial revolution (4IR) and community engagement skills in their curriculum. Moreover, a new VC promoted the concept of the entrepreneurial university, and academics were expected to embed this into their curriculum content. Added to this, was the concept of responsiveness and innovation in both teaching and research, which, and in support of Powell & McKenna's (2009) argument, the VCs regard as something of a trademark for a UoT as opposed to a more traditional university. In recent years there were also further pressures from student bodies for a more decolonised curriculum. This would involve re-examining the curriculum to include issues and perspectives relevant to the majority of the population in South Africa, as opposed to maintaining what students perceived to be a Eurocentric-focussed approach. University management requested that academics attempt to respond to this call in the content of their courses, following concerns raised by the main student decolonising movement, #FeesMustFall (Langa 2017: 10).

Academics claimed that they were being asked to do more and more and did not know how much further they could stretch themselves. They could not keep all the '*... balls in the air*', continuously '*juggling*' the above competing pressures. These new initiatives were also often introduced with a once off information session and very little '*after sales service*' to ensure continued success. Participants represented their frustration with the multiplicity of tasks in the following way, with one participant holding up an elastic band:

... they've stretched me as far as I can go, because I need to do everything and be everything to everyone. I need to be excelling in community engagement. I need to do research and I need to be teaching, same load as everyone else ... so, how much further until this breaks?

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Academics seemed to experience a sense of helplessness and despair, not knowing where they were currently headed:

There is a dissociation from yourself ... a multiple personality ... we have disassociated from ourselves and we are moving into something else and becoming another personality.

Despite these challenges, academics persevered in developing productive ideas to deal with their multiple roles. For example, participants suggested that a typical university workload model did not work for a UoT, and was ‘*disproportionate*’ as there were so many extra tasks UoT academics had to engage with. The development of new, UoT-focused workload model was thus proposed. An additional concept raised to assist staff navigate these multiple roles was support and training workshops from the teaching and learning and research centres. However, as staff reflected on attending these workshops, additional issues emerged:

... demands on academic staff are increased ... staff are expected to attend professional development, capacity building workshops. However, staff do not often have the time to attend, as staff have other academic commitments

Time was not the only issue for staff as they attempted to conduct their day-to-day work. Though not clearly outlined and discussed in detail, administrative support also emerged as being less than sufficient:

When you look at tools, we had a fantastic finance system which worked brilliantly, it was less complicated, it was organised and swift ... and (now) we do not have this ...

We now turn to the participants’ engagement with additional CL methodological tools: change grids, activity systems and germ cells. These tools helped the academics to gain a more systematic and theoretical understanding of the conflicts experienced in working life.

Historical Change Grids

As already pointed out, the grid is a tool which helps academics to see where

changes have occurred over time, and whether tensions have arisen because some elements have changed more than others. As can be seen, what emerged from the historical change grid in Table 2 by-and-large cemented what had already emerged in the conflicts of motives section above.

In the grids, academics again brought up the introduction of multiple new objects as the UoT emerged from the previous more technically-focused Technikon. Furthermore, academics described what they saw as an attempt by the UoT to emulate the more traditional universities through, for example, promoting increased research outputs and staff PhDs, or ‘academic drift’ (Kraak 2009). Many of the problems emerging from these changes was ascribed to top-down, more hierarchical forms of management, which academics felt had persisted over time. Such forms of management were problematic in the past but had become even more challenging as the institution increased in size and took on more complex roles in a changing society.

Linked to hierarchical management were also administrative services, particularly Finance and Human Resources, which the academics described as having become less responsive over time to the needs of staff and the multiple issues they had to deal with. Furthermore, administration had become less flexible at a junction when the complex roles academics were expected to play (responding to community, research, entrepreneurship etc.) had dramatically increased. Academics went so far as to suggest that administration exerted much power in the university, and may almost have become a system unto itself, rather than a more interrelated part of the university system as a whole.

Activity System Diagrams

Throughout the CL sessions academics moved back and forwards between issues they experienced in their daily work, and the analysis of these issues on an activity system diagram. Flowing from this, and including the historical analysis on the change grid in Table 2, a final version of the current activity system of the UoT, and the main contradictions which emerged, is shown in Figure 3.

Table 2: Historical change grid using activity system elements

Institution Typology	Object	Subject	Tools	Rules	DoL	Community
Technikon 2000	Technical competence in students	Technically competent staff	Efficient, serving administration	Consistently managerial	Changing VCs	Mostly workplace
UoT 2017/18	General Education entrepreneurship, community, research, IR4 etc.	Academically competent staff	Inflexible, dominating administration		Consistently hierarchical management	New students and changing society.

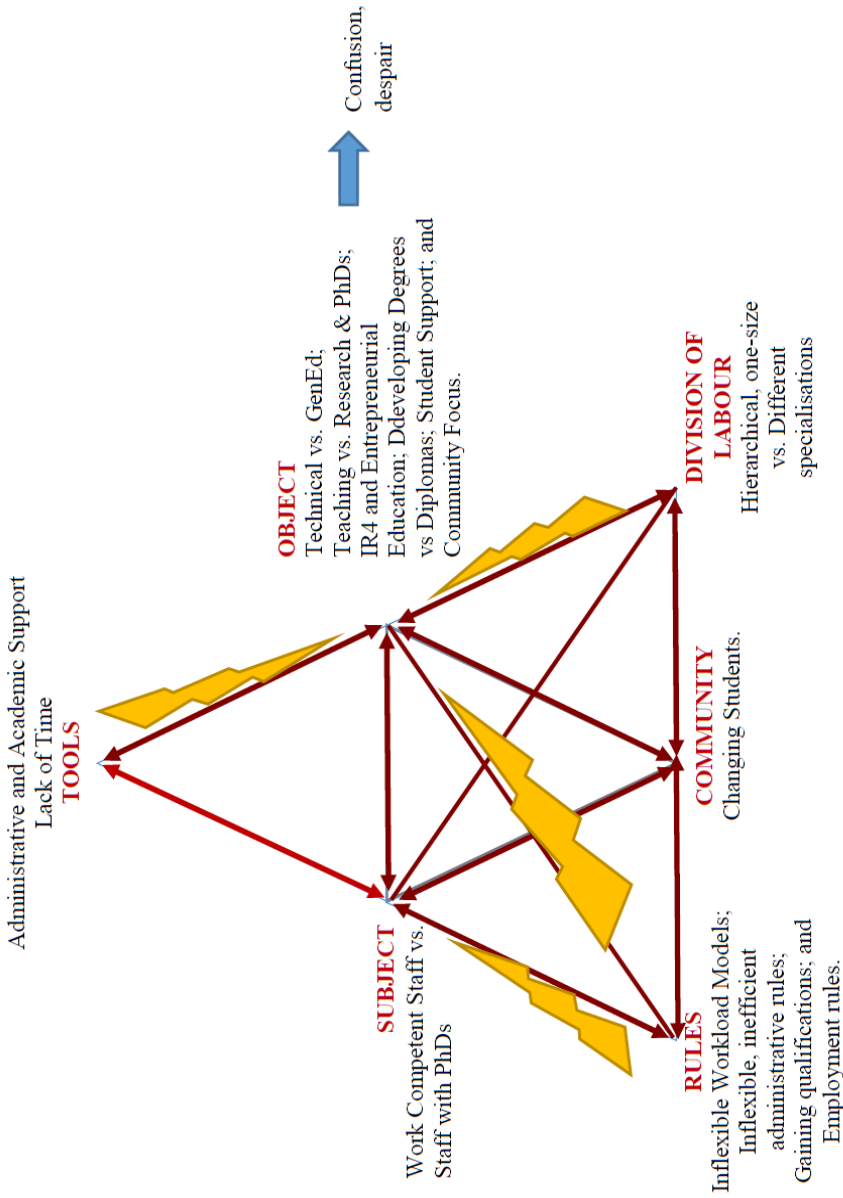


Figure 3: Main contradictions in the activity system of the UoT

On Figure 3, the first and most obvious issue which emerged was that of the multiple objects academics were expected to work on. Should they, for example, be spending their time and resources on developing teaching for General Education or on doing research? Or on developing their own higher qualifications? These constituted contradictions within the object element itself.

Academics did attempt to work with these different objects, but this would in turn require that there is flexibility in management to take account of the different ways academic departments deal with these objects. Hence, there was a contradiction between the more hierarchical, one-size-fits-all approach from management and the multiple objects staff were expected to work on. Furthermore, the support systems in the university, which constituted the tools and rules staff needed to work on the objects, were insufficient. Thus, there was a contradiction between available resources and the demands made on staff as a result of their having to work on these multiple objects.

Staff also identified a contradiction within the subject element – are staff to be technically/work experts or academically qualified? The subject, then, may also be in contradiction with some aspects of the object (for example, how would a staff member drawn from the academic stream deal with work-place readiness of students?).

The contradictions between the different elements are indicated by the lightning strike logos on figure 3. From Figure 3, even though the main difficulty was with multiple and often competing objects, the different elements both contributed to and exacerbated the problem. As indicated on the right of Figure 3, the result or ‘outcome’ of the activity system was academics feelings of confusion and despair.

Initial Attempts to Resolve Contradictions within the Health UoT Activity System

In attempting to resolve the contradictions in Figure 3, academics first returned to the initial concept of a ‘new expanded professional’ (Figure 2). Academics posited that new professionals, if they were to be effective in a changing world, would need to articulate both technical and more holistic social awareness competencies. This concept had the potential, when developed, to bring together and resolve a fundamental contradiction between teaching for work readiness and more holistically for citizenship through General Education. The

new expanded professional, as a bridging concept, can thus be described as a ‘germ cell’.

The issue of the discord between research and teaching, however, may still remain. In response to this contradiction the academics articulated the idea of the UoT moving from a more structured, classroom-based pedagogy towards project-based learning (PjBL). Though there are many different understandings of PjBL, the participants highlighted that it should focus on investigating real problems at work, what Hanney & Savin-Baden (2013) describe as as PjBL orientated to real activities in the workplace, with an emphasis on practical solutions. For the academics, this teaching approach had the potential to resolve tensions between teaching and conducting research, and may be another contradiction-resolving concept or germ cell (Sannino & Engestrom 2017). Project-based learning however, does not fit well on the activity system diagram as an ‘object’. It is better conceptualised as a tool (Figure 4) to help staff work on the more singular object of the ‘new expanded professional’.

Furthermore, some of the previous objects (e.g. developing 4IR and community responsiveness) can be moved from the object to the tools element of a new, proposed activity system in Figure 4. The observation that many of what were originally seen as objects are in fact better understood as tools, is a common development in Activity Theory analysis. Virkkunen, Makinen & Lintula (2010: 18) refer to this as ‘object-tool’ reversal. This reversal often camouflages what the true object of the system should be, and can constrain productive thinking towards working on this object. In performing the reversal, participants can understand the activity system from a different, more focused perspective, so opening up possibilities for change.

Finally, academics began to work on what conditions in the rest of the activity system would be necessary to forward this new object of an expanded professional. Firstly, they argued that there would need to be more flexibility in how staff work, in other words a more flexible workload model in the rules element. As Zukas & Malcolm (2019) noted, workload models tend to be the ‘official’ version of what staff do, often ignoring the reality of academics’ daily toil. This reality was what the academics wished to be acknowledged in a new workload model. Furthermore, working on the object of the ‘new professional’, and the use of PjBL for this purpose, would require a change in how management takes decisions. Different university specialisations, for example, would require different affordances, and there can no longer be a one-size-fits-all approach to decision making. For example, conducting research and attaining

higher qualifications may require a different emphasis in a more practice-focused field like Dental Technology as compared to a more theoretically-focused field such as Environmental Health.

A suggestion to resolve the contradictory nature of administration as an entity unto itself is to envisage administration as part of the UoT community. In this way, as can be seen from Figure 4, administration is reimagined as having a common interest, or even commitment, to working on the new object of the ‘new expanded professional’.

Back to Management: Further Experimentation with the Change Laboratory

Change laboratories in large organisations such as universities can only deal with a small number of staff and operate within a ‘protected space’. Protected spaces are environments which exist without the surveillance and interference of management can therefore enable the development of new ideas in a relatively free-flowing environment (Rip 2020: 36). Sannino & Engeström (2017) refer to these new ideas developed through relatively unconfined processes as ‘possibility’ knowledge. At some stage however, this possibility knowledge needs to be exposed to, or tried out in, the real world of university operations. As part of this experimentation, and in order to move out of the protected space, Virkkunen & Newnham (2013) suggest that input from management is a necessary step in CL processes. To this end, the group decided, with some trepidation, to present their process and initial findings to the University Institutional Forum, an advisory body for the universities’ strategic planning initiative for 2020. Despite initial misgivings, the Forum was highly supportive of the work already completed in the CL, responding that many of the issues raised were already ‘back of mind’ in the forum, but not always responded to. As one Forum member stated:

... we have a chance (with change labs) to eradicate some issues that have for too long been ongoing.

Members of the Forum even went so far as to suggest that they themselves should constitute a change laboratory to better elucidate the current problems facing the university, and to chart a better way forward. This proposal was subsequently supported by the Forum Chair, and a commitment made to take up the challenge in 2020.

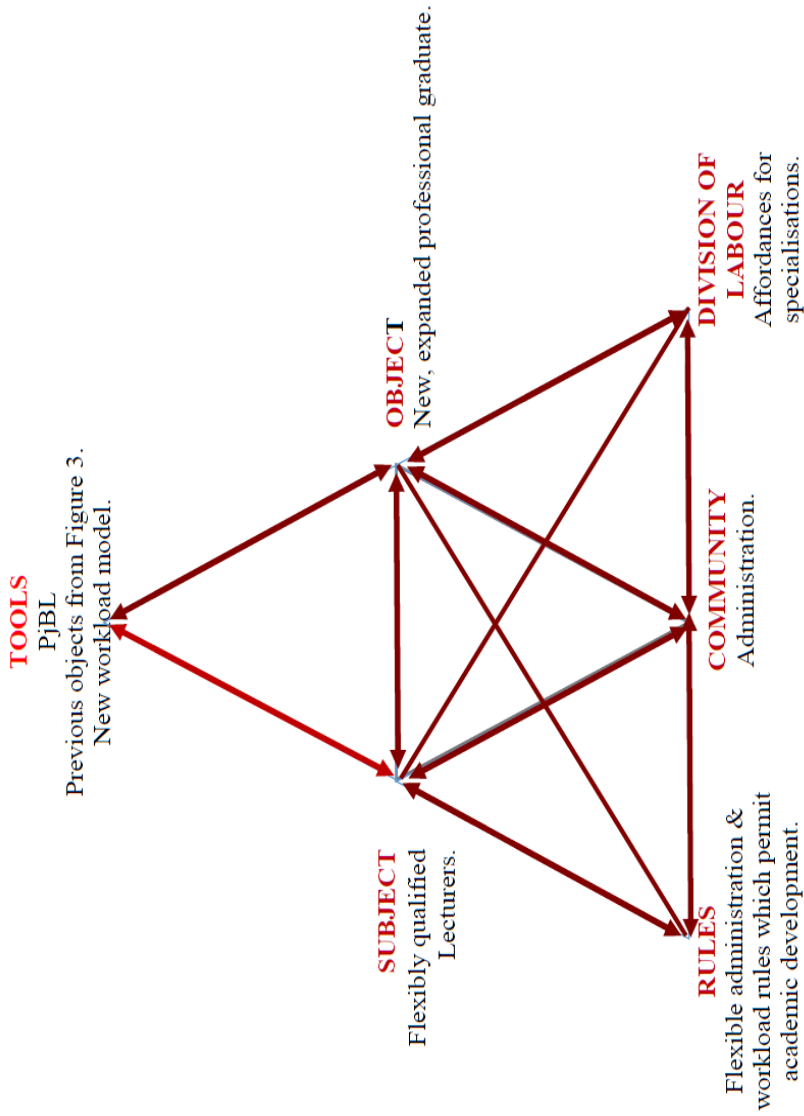


Figure 4: A proposed more advanced activity system for a UoT which attempts to resolve contradictions in working life.

Conclusions

As stated in the introduction, the aim of the article was to illustrate how the CL methodology can support staff's learning, or more specifically expansive learning. In the CL of the university we began with a group of academics experiencing great difficulty with their working life. The difficulties are numerous (multiple roles to fill and lack of time, changing students, hierarchical management, the move from craft to more holistic teaching and so on) and difficult to deal with. Academics may feel themselves to be trapped within an 'iron cage' (Engeström 2007: 362) that is not of their doing and they can do little about. What the CL approach does is, firstly, to provide staff with thinking tools to understand these difficulties more systematically and collectively. When placed on activity system diagrams or on four-fields, difficulties can be seen as related, not isolated, and as products of long-term historical tensions within the system itself. Through looking at difficulties in this way, academics were able to break out of the iron triangle and to imagine new possible ways of doing that in part resolved the underpinning contradictions (Sannino & Engeström 2017) (for example, through proposing a new object of the 'expanded professional' graduate).

The article does not, as it stands, make any strong claims as to what may be problematic within the university in question, nor how to resolve such problems. Rather, the CL research focuses on academics' learning and development. Perhaps, as Sannino & Engeström (2017) suggest occurs within most CL initiatives, participants in this research may also have gained greater control of their workplace issues.

However, there may be future developments emerging from this research that do address problems and their resolution. Firstly, there is the further concretisation of future proposals suggested in the change laboratory as they circulate within the University Institutional Forum. Secondly, and related to the former, there is the commitment to spend some time working with these and other problems in a future 'management' change laboratory, possibly in shortened form.

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