

**Examining the Mechanisms for Variation in Student Outcomes from
Work Placements: Glimpsing Expansive Learning in a Placement
Student Change Laboratory**

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June 2018

This thesis is submitted in partial fulfilment of the requirements for the degree
of Doctor of Philosophy.

Department of Educational Research,
Lancaster University, UK.

**Examining the Mechanisms for Variation in Student Outcomes from
Work Placements: Glimpsing Zones of Proximal Development in a
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Signature

Simon Peter Snowden, BA (Hons)

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Abstract

The research in this thesis is an exploration of the experience of students on work placement as a part of their degree. Using Cultural Historical Activity Theory (CHAT) and the Change Laboratory (CL) methodology it investigates the barriers to business students using taught theoretical structures to understand their concrete practice and the use of the CL to address these barriers. The CL is a tool to raise awareness of contradictions that participants experience in their practice settings and seeks to empower them to resolve the contradictions. 12 participants from a Russell Group business school, working in a variety of organisations and locations, partook in an exploratory online CL.

It was found that the primary contradiction that affected the students was expressed in their conception of education. The study suggested that they see taught theory as simply something to be learnt for assessment and not necessarily as a tool for shaping interventions in the business environment. The mediating power of theory was diluted, if not eclipsed, for the placement students by their experience of an education they felt to be focused on exam performance more than understanding the social world around them. The

study further suggested that the use of a Change Laboratory, through its intentional intervention in the students' development helped them address this contradiction and begin to remediate theory.

From this analysis the thesis examines the role of mediation in the internalisation/externalisation process detailed in CHAT. It extends the idea of vectors of mediation where each mediating component in an Activity System has both a magnitude and direction of mediation. Different mediating components can vary in the strength that they mediate a subjects understanding. The manner in which a subject perceives a mediating component can actually redirect the mediating force in such a way that it can be limited in its ability to mediate effectively.

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List of abbreviations

CHAT	Cultural Historical Activity Theory
ZPD	Zone of Proximal Development
EL	Expansive Learning
CL	Change Laboratory
AS	Activity System
CH	Critical Hermeneutics

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Chapter 1. Introduction

The research documented in this thesis is for the purpose of a PhD in Educational Research at Lancaster University. It is an examination of the lived experience of students whilst on work placement in an attempt to understand specific mechanisms that are at work to produce the outcomes - academic, professional and employment - expressed in the academic literature. The research focused on the experiences of 12 undergraduate students as they reflected on the dichotomy of theory/practice whilst working in a professional setting for their third year of study. This study utilised the Change Laboratory (CL) from Cultural Historical Activity Theory (CHAT) as the primary tool to help the students develop a more nuanced appreciation of the role of theory in practice.

This chapter will provide some context for this research including biographical notes for the researcher, comments on the institution and impressions on the student body. The rationale for this research will consider the border between education and work where placement students are operating. From this we can then provide a statement of the problem that the research addressed from which the research questions will be expanded and the research timetable detailed. Finally the structure of the thesis will be explained.

1.1. Research Context

Having left school at 16 I became an apprentice in a large UK company, but at the end of this apprenticeship I returned to education ultimately going to

university with just a few O Levels to my name. I am now a Senior lecturer at a so-called 'Red Brick' university in the UK. I work in the management school of the institution and have taught a number of subjects at both undergraduate and postgraduate level including operations management, technology in business and sustainability in business. Before joining the university I spent 10 years in the commercial sector working variously as a software developer, R&D manager, and operations and project manager. To me this history of moving in and out of education demonstrates my own relationship to the role of theory in practice and theory's relationship to experience.

Working in an educational institution creates a sense that theory should be something of great importance that can lead humankind to a brighter future. But as I point out to many university applicants and their parents in my current role, *'theory isn't the real world - theory arises from our observations of the real world - but in a much distorted manner'*. This could be considered to be a trite statement pandering to the idea that book learning is not really worth much. However, for me it captures the difficult relationship that social theory has to the social world. Theory is not produced in a vacuum, but is produced by human beings observing the world, affected by the world and affecting the world. Theory is a set of generalisations distilling an 'essence' from the reality of social interaction, but missing all of the complicated messiness that makes it the 'real world'. It can be an important tool in helping us to intervene in the world, but, through our interactions with the many social structures that envelop our lives, the theories we learn in education are adapted, dismissed, and, often, forgotten. I personally find it difficult to see how we can fully understand

any theory without engaging in its practical application. For those studying management theory at whatever level, ultimately they must engage in work practices to fully appreciate the foundational structures of these theories and uncover the assumptions that underlay key ideas on how we organise our working lives. This is a very personal position and is the basis for my engagement with the practice of work placements as a part of the educational experience, and has, probably, its foundation in my own very mixed working life.

The work placement, as an integral part of a student's studies, can play an important role in developing sophistication in understanding and lead to much more nuanced practitioners. I am left wondering why, from my own experience, does this not always happen? What is the nature of the placement experience that means some students grow in theoretical understanding, but others reject it longing to return to the practicalities of the workplace seeing no room for the 'made up world' of theory. I am not judging either position to be right or wrong, simply acknowledging the differences. This thesis is my attempt to add to the theoretical landscape of the placement experience and provide some small understanding of the learning process that students go through.

My institution is one of the original nine Red Brick institutions and also a member of the prestigious, although self selected, Russell Group of universities. Its student body of some 20000 individuals is drawn from those achieving some of the highest grades in secondary education. They are perceived as the good students. Of those from the management school

participating in the placement programmes during their 2nd year in the 2016-2017 academic year, it should be noted that 54% were male, 78% had opted for A levels over all of the other potential qualification they could have taken, 62% came from socio-economic groups 1-3, 92% were from the UK, only 5% had a declared disability, 95% were under the age of 21 and 80% were white. This is an environment with high levels of homogeneity, and yet great diversity in outcomes. The student body may look the same, but do they think and act the same?

The students in this study undertook a placement at private companies, but others on the programme have also worked in the public and third sectors. Most were at large multinationals with only two placed in small organisations. Their placement consisted of at least 40 weeks of work (including any paid holidays) but often lasted longer. It took place between the 2nd and final year of their studies. Throughout their second year of studies, as well as doing their academic work, they were applying for their placement positions. These applications involved lengthy application processes requiring a number of tests, interviews and even periods away from their studies for assessment centres. Most of the students obtaining a placement were on track for an upper second-class degree, typically a requirement of the employer organisation.

The form of placement they participate in is typical in the UK especially for business schools, and described as sandwich placements. This is not the only way that students may experience a placement in the UK and internationally. Other forms include:

- A defined number of hours scattered throughout the period of study (usually in clinical disciplines).
- A term or semester in another organisation.

1.2. The role of education in work

Debate about the role of education and work has been around for a long time represented in modern educational theory by the likes of Dewey's progressive educationalism (Dewey 1997) and, more recently, in public discourse by Paul Dreschler's intervention on education and preparation for work (CBI 2018). Saunders (2006) discussed a variety of narratives about education and many were noted for their focus on the economic aspects of education and it has been suggested that the recent period of global change in HE has seen it increasingly linked to economic progress (Vaira 2004, Shattock 2009). The work placement as a part of a programme of study lays directly on the intersection between education and work and for that reason is an important setting to examine the mixing point of two environments supposedly separated by cultural differences. The academic requirement of the work placement provides an easy setting for interventions.

Discussion surrounding work placements is typically of a developmental nature and how a student derives benefit from being in 'the real world of work'. Work placements have existed in the UK for many decades (Jones and Healey 1995, Kiely and Ruhnke 1998, Huntington, Stephen et al. 1999) dominated by a particular form – the sandwich placement. This form of situated learning often gives the appearance of the apprentice and it is no surprise that ideas

surrounding communities of practice (Davies and Sandiford 2014) are brought to bear when investigating student work placements. However, discussion of this important component in learning about practice conceives of little involvement for HE other than a minor role preparing the student for the work place. It would appear from policy that 'learning about work' can only take place in the 'real world of work' and the formal educational environment of HE adds little – may even be a barrier - to learning (for an example of this see Department for Business Innovation and Skills 2012). From this it may be inferred that HE is somehow in a deficit of learning that only experience in the workplace can overcome. This leaves a number of questions regarding the role of the work placement in student learning and how best to understand it.

1.3. Aims of the research

The purpose of this PhD study is to explore support for students on work placement to promote student exploration of the relationship between theory and practice. Arguably, a main objective of work placement as part of tertiary studies is to increase student understanding of theory through practice and therefore increase employability chances for the student (Powell 2001). Within this context, my research aimed to explore how academic support during the work placement can help students to address the theory/practice dichotomy and so develop a more critical appreciation of how theory is used in a practical situation. Such a study is relevant considering the continued interest and debate about the role of work placements in Higher education.

1.4. Research Questions

The primary research question for this study is:

How can a Change Laboratory research-intervention support a group of placement students to take abstract concepts of management theory and embed them concretely into their work practices?

This question has as its focus how students make use of the theory they have learnt in a business subject in the day-to-day practices required of them. It is also assuming that this process can be intervened in and aided through a specific form of research-intervention known as the Change Laboratory (CL). To open this primary question up further 3 supplementary questions are to be used.

- Q1. To what extent do the concepts of CHAT and the Activity System explain the students' practice settings and transformations in practice?
- Q2. What are the barriers to students conceiving management theory as concretely relevant to their local practice settings?
- Q3. To what extent can changes in participants' orientation to theory be discerned as attributable to the participants' work within the research-intervention?

Q1 raises the theoretical underpinnings of the CL that lie in CHAT and specifically the Activity System formulation and questions if they provide a suitable framework for explaining the practice setting of the students. If CHAT is unable to explain their situation, then it may be unlikely that the CL would be a successful intervention. CHAT will be explored further in Chapter 2. By presenting Q2 there is an assumption that there are barriers that can be

identified. This arises from the academic literature that will be explored further in Chapter 2. The final question asks about the level that any transformation that may be identified could be linked back to the intervention of the CL.

1.5. Structure of the Thesis

Chapter 2 examines two areas in the academic literature. The first section will examine the literature surrounding placements specifically looking at the outcomes of the placement experience. It will look at academic outcomes and how it is proposed that it significantly improves achievement, employment outcomes, and more ephemeral outcomes relating to issues such as capability and aspects of personality. It shows how there are actually a variety of outcomes and that the issue of this variety is poorly developed at this point. Chapter 2 will then go on to unpick the theoretical foundations of Cultural Historical Activity Theory. It will break it down along four lines that are ontological and a fifth epistemological. The four ontological areas will cover the non-dualist nature of CHAT, dialectical relationships, the relationship between society and individual and finally the materialist base of CHAT. The fifth strand is the operationalising of this ontological knit providing a set of classifications for organising the working environment through what is commonly referred to as the Activity System. The CHAT section will look at how the commonly used triangular format of the Activity System Diagram can lead to theoretical obfuscation missing potentially important relationships and leading to issues such as power in social relations being underplayed.

Chapter 3 will further examine CHAT as we turn to consider the methodology. It will look at the idea of expansive learning and the Change Laboratory methodology linking it to the student placement experience. The chapter will start by examining the issues of validity and reliability in qualitative research framing the study as a transparent research audit exposing the research and researcher to the scrutiny of others as part of a collective research endeavour. The main focus of the chapter is to show how the chosen approach emerged from my experiences and observations and how they link to the core elements of the CL. It will link individual consciousness, collective activity and transformation to the potential for variations in outcomes that we see in student placements. A specific form of transformation will be explicated through the CHAT concept of expansive learning, an ontological reorientation driven by conflicts, tensions and dilemmas in the concrete practices of work awareness of which the CL aims to provoke through 'expansive learning cycles' comprised of different phases of inquiry and action. Some of the key critiques of CHAT/CL will be visited to further focus this study.

Chapter 4 will take this methodological basis to explain the methods used in the study. This will include an examination of the exploratory online approach taken including the construction of the various phases of the expansive learning cycle. It will outline the dual aims of the CL, the first to meet the needs of this research, but also the need to meet the academic requirements of the placement. By exploring the various requirements of the CL it will show how the various components came together and provide detail on the activities the students were asked to participate in and how this provided the necessary data

for analysis through the reflective learning logs the students have to produce for their assessment. The analytic approach will then be detailed including a discussion of the use of Critical Hermeneutics as an appropriate tool for examining the student reflections in their learning logs.

Chapter 5 will present the findings from the analysis of the learning logs through the lens of Critical Hermeneutics. It will start by looking at the intentions behind the learning logs and how they may shape the production of the learning logs alongside how the style of the learning logs impacts on the subsequent analysis. The frequency of postings and depth of discussion will be looked at as a demonstration of the participants' engagement in the CL process highlighting possible deficiencies in the method. Chapter 5 will then move onto a detailed examination of the learning logs using excerpts by different participants to exemplify specific points that were developed. It will show how students perceive a big difference in the cultures between the workplace and education. The importance of their communities is drawn out and the role that the community plays as a group of colleagues but also as a structure in which they find their 'place' in the working world. It will further explore the role of conflicts and dilemmas in reflecting the complexity they see in the professional environment. Finally it will look at how they see themselves and the tasks they have to do both for work and university.

Chapter 6 will deepen this analysis discussing these findings and using the structures of CHAT to make sense of the placement experience and exposing points where variations in outcome could occur. It shows how, when students

are faced with the lack of utility they perceive in education in trying to understand this alien environment of work, rather than simply focusing on performing their day-to-day tasks, they actually focus on becoming members of their community that competence in performing their day-to-day tasks will open up. By exploring the conflict that now arises between the academic and professional, and the dilemmas they face in their day-to-day tasks, the chapter explores the idea of mediation central to CHAT. It will propose that mediation, as a vector, not only provides a channel of influence in the relationships within the AS, but that these mediating relationships also have a strength and direction. That the rejection of academia that we see in the students accounts represents a weakness of mediation of theory and is actually a misdirection of theory arising from a primary contradiction between use and exchange value in education. That academia provides no utility in understanding the world of work, the students turn to another component in their AS to provide that role - their community. One mediated relationship is weakened and is contrasted in the strength of another. However, by exploring AS that have localised instantiations for comparison we can also see how mediated relationships can themselves be mediated and this opens up the possibility of variations in outcomes even where individuals have a similar experience. It will go on to show how the CL provided a route to a resolution of the primary contradiction allowing the students to reorient themselves towards theory and use it as a tool to understand their working world. The chapter finishes by exploring the impact on me, the researcher, attempting to close the hermeneutic circle.

The conclusion outlines the contributions that this study has made and looks at weaknesses in the project. It finishes with recommendations regarding the development of placement provision as a part of a programme of study in HE.

Chapter 2. Using Activity Theory to Explore the Outcomes of Student Work Placements

There have been many claims about the efficacy of the work placement as a part of HE study and for the outcomes participation in such an endeavour produce. To better understand how such outcomes are produced this study requires that we explore, in the first instance, the current state of research surrounding placements. To progress this investigation of the process of the work placement we will then examine how Activity Theory, specifically Cultural Historical Activity Theory, provides a basis for the work in this thesis.

The first section of this chapter will examine the literature surrounding placement activities looking at the benefits claimed for such an exercise. It will cover the academic, employment and skills advantages that accumulate whilst on placement. It will show that these gains are not universal or equal in effect, nor are they automatic. It will further demonstrate that there is a disparity between these accounts of the benefits and an understanding of how they accrue. This study proposes that Activity Theory bridges this gap by providing a theoretical framework through which the boundary between classroom learning and practice-based learning can, not only be analysed, but intervened in to more reliably generate positive outcomes through the Change Laboratory.

To demonstrate how Activity Theory can produce such outcomes the second section will examine the theoretical roots of the Change Laboratory (CL) in Cultural Historical Activity Theory (CHAT). This will propose that CHAT can be seen as being constituted of 5 threads of reasoning, four that are ontological

and the fifth, focused on the Activity System format, epistemological in thrust. The first four threads, through an examination of 'Learning By Expanding' (Engeström 1987) supplemented by other texts, will be identified as an elaboration of the triadic relationship, the overlaying of a mediated relationship, the dominance of material reality and the social over the individual. The final thread defining the Activity system will then be examined. Once the fusion of ideas underlying CHAT has been elucidated, problems in the reasoning surrounding the Activity System will be highlighted and the idea of a vector of influence in mediated relationships proposed. It is the level of effect that mediated relationships have within the Activity System that helps explain the variation in outcomes for students who participate in work placements.

2.1. What Tells Us More About Work Placements - Outcome or Experience?

Work placements have existed in the UK for many decades (Jones and Healey 1995, Kiely and Ruhnke 1998, Huntington, Stephen et al. 1999) dominated by a particular form – the sandwich placement. The focus for this study is this style of placement. The sandwich placement degree often used in Business Schools (Fowler and Tietze 1996, Surridge 2009) is a four-year degree programme that is an extension of the more typical three-year undergraduate programme. Rather than progressing into the final year of the degree, the third year is spent in a workplace, after which the student returns to their institution to complete their degree studies. There have been a number of reports and studies (Schaafsma 1996, Powell 2001, Auburn 2007) on the importance of work placements and the impact this activity has on student academic

Using Activity Theory to Explore the Outcomes of Student Work Placements

achievement and employability (Reddy and Moores 2006, Bennett, Eagle et al. 2008, Mansfield 2011, Wilton 2012, Brooks 2012).

The placement has been visualised as an extra resource driving students' understanding of theory and positively impacting on degree classification (Crawford and Wang 2016, Ceschin, Rakowski et al. 2017). However, quantitative studies on the work placement (Duignan 2003, Mandilaras 2004, Gomez, Lush et al. 2004, Reddy and Moores 2006, Mendez 2008, SurrIDGE 2009, Driffield, Foster et al. 2011, Mansfield 2011) display differences in findings on the actual academic impact of placements. It has been argued that the experience of a placement does not necessarily negate the many other factors that impact on degree performance (Gomez, Lush et al. 2004, SurrIDGE 2009, Cassidy 2012), but appears to make a contribution to performance improvements (Reddy and Moores 2006, Reddy and Moores 2012, Binder, Baguley et al. 2015, Jones, Higson et al. 2017). There is research to link pre-existing factors to the choice to do a placement indicating that the choice is a reflection of engagement in the learning process (Duignan 2003, Driffield, Foster et al. 2011) where better students choose to do a placement. Yet transformative aspects of the placement have been detected driving engagement where previously underperforming students are enabled to achieve higher grades (Mendez 2008, Mansfield 2011). The role of assessment in the placement suggests that support and clarity of the learning objective (Fowler and Tietze 1996, Huntington, Stephen et al. 1999, Reddy and Hill 2002) are important resources in ensuring an improved learning experience for students whilst on placement but there is nothing to point to a specific type

of assessment having better outcomes (Fowler and Tietze 1996, Huntington, Stephen et al. 1999, Reddy and Hill 2002). Appraisal and feedback viewed as an outcome help students clarify their academic performance (Auburn 2007, Blackwell, Bowes et al. 2001).

The link between employability and placements displays a level of ambiguity where a variety of mechanisms are exhibited. When looking at career progression and starting salaries, the impact of a placement is quite mixed where students can be more successful on obtaining gainful employment on graduation (Kiely and Ruhnke 1998, Brooks and Youngson 2016) but that many other factors act as confounding variables (Wilton 2012). Both students (Kiely and Ruhnke 1998) and employers perceive work placements as a part of a degree in a positive light helping improve employability and technical skills (Davies and Sandiford 2014) and a placement may help negate the impact of 'a good degree from a good university' with regard to employment prospects (Bennett, Eagle et al. 2008). Those students who have done a work placement report slightly greater levels of work satisfaction (Wilton 2012) in their subsequent careers, and better clarity in career direction (Zegwaard and Coll 2011). Students also report a greater sense of the social aspects of work (van Zwanenberg 1985, Davies and Sandiford 2014) and greater appreciation of the role of workplace jargon and so sound and act like a professional (Davies and Sandiford 2014).

Whilst on the placement itself there are many other possible outcomes for the individual student. Students can develop a real sense of belonging throughout

their time on placement and through this a sense of legitimacy. Conflict (Williams and Marsh 1972), mistakes and concerns with a company's ethics (Clark and Zukas 2014) can be some of the more negative outcomes (Reddy and Hill 2002). Skills are a much-discussed product in the literature covering areas such as employability skills (Kiely and Ruhnke 1998, Reddy and Hill 2002, Davies and Sandiford 2014, Wilton 2012, Clark and Zukas 2014, Blackwell, Bowes et al. 2001, Fell and Kuit 2003), soft skills (Kiely and Ruhnke 1998, Reddy and Hill 2002, Gomez, Lush et al. 2004, Little and Harvey 2007), and disciplinary/technical skills (Auburn, Ley et al. 1993, Reddy and Hill 2002, Eames and Bell 2005, Little and Harvey 2007, Paisey and Paisey 2010). Often students come back with a greater level of maturity (Kiely and Ruhnke 1998, Stephen, Jones et al. 1997, Mansfield 2011, Bullock, Gould et al. 2009). Throughout the placement process the orientation to work including their work values/ethics develop as do their approaches to learning alongside a greater awareness of the social/informal aspects of the working environment (van Zwanenberg 1985, Kiely and Ruhnke 1998, Eames and Bell 2005, Davies and Sandiford 2014).

Much research on work placements has an emphasis on the outcomes for those taking part in a placement activity and on assessing the level and impact of these outcomes. Examination of the experience of the placement activity, although more limited, provides some interesting points when considering the discrepancies in outcomes between the different studies. For example, the framing of assessment, and therefore performance on assessment, is improved through well-developed relationships (Fowler and Tietze 1996,

Huntington, Stephen et al. 1999). The nature of the work that the students do whilst on placement (Huntington, Stephen et al. 1999) also impacts on student achievement. Clark and Zukas (2014) identify a link between the fit of an individual's dispositions and the practices of their placement setting in successful results focusing on the relational aspects of work. There are some aspects of the placement experience that are perceptual in their nature, but none the less important for that. These are perceptions of good support (Barthorpe and Hall 2000), a good experience (Kiely and Ruhnke 1998, Auburn 2007), but also more negative perceptions of isolation, and anxieties about placement availability.

Within the studies that do explore the student experience, however, we can see a tendency towards an observational form that comments on, rather than explains, the student experience. In broad surveys that lack a framework to structure their findings we can see how notions of placement value are too inexact to provide any real sense of what value means and to who that value may accrue (Kiely and Ruhnke 1998). A loose sense of precision in terminology, especially those relating to discussions of the various skills developed whilst on placement, can lead to a lack of focus that is central to a stronger narrative of student development. We can see how complex ideas such as conflict (Williams and Marsh 1972) are poorly considered and reduced to a weakly situated disagreement between two or more parties and what does it mean to have an increase in self confidence and maturity (Stephen, Jones et al, 1997, Mansfield 2011)? If performance in an assessment is impacted by relationships (Fowler and Tietze 1996) what is it about the relationships that is

Using Activity Theory to Explore the Outcomes of Student Work Placements

impactful and how do we frame these relationships so that proposals for 'learning contracts' are more than a ill defined attempt to enforce relationship in an instrumental fashion? All of this coupled with loosely developed taxonomies of broad concepts (Reddy and Hill 2002) provide limited understanding of how variation in placement outcomes arises and mean that it is difficult to see if it may be possible to create more consistency in outcome, or what form of outcome may be best pursued from an educational stance.

There are notable exceptions to the theoretically weak articulation in the research literature on placements (Eames and Bell 2005, Clarke and Zukas 2014, Davies and Sandiford 2014). In these studies theory is used as a lens to provide more structure to help understand the experience students on placement confront. However, much of the literature is primarily a source of empirical observations lacking an overlaying organisation that seeks to explain the lived experience of student placements and the mechanisms that are at play. The kind of study that is necessary to expand our understanding of the placement solicits a more systemic approach to expose these mechanisms and provide structural insights so that rather than disembodied proposals for intervention in placement learning, educators can make formalised interventions that have a greater likelihood in affecting said mechanisms and achieve greater levels of success for students.

If the work placement is a place where students put theory into practice (Ryan, Toohey et al. 1996, Bennett, Eagle et al. 2008) using their practical experience to help illuminate the theory they have been studying in the classroom (Davies

and Sandiford 2014), does an emphasis on outcomes provide sufficient evidence on its efficacy in this role? This accent on outcomes looks more like a justification for the placement activity rather than an attempt to understand the lived experience of the participants. If we are to understand the potentially transformative experience of work placements that the literature alludes to (Lucas and Tan 2014), then we must move beyond assessing outcomes and build a more detailed picture of the experience of learning whilst on placement (Anderson and Novakovic 2017) and it is in this space within the literature that this study will explore work placements for students from a Business School.

Coupling the suggested development of a more detailed picture of the lived experience of placement students with their direct engagement in understanding the theory/practice relationship through a reflective process requires a theoretical framework that helps provide a structure to this complex of requirements. The literature surrounding such practice-based learning tends to cover two distinct trends. The first is learning through an intentional direct engagement with a phenomena (Billett, Barker et al. 2004, Amin and Roberts 2008, Pang 2015), the second a more reflective form of learning through participation (Crebert, Bates et al. 2004, Kolb and Kolb 2005, Austin and Rust 2015, Milne and Adams 2015, Vasbinder and Koehler 2015). The work placement would appear to bridge both of these approaches where there is clearly an intention that students engage with the theoretical structures that they have been taught previously, in a relevant setting, but learning is less structured than formerly encountered and requires a much more reflective approach based upon their experience as an employee in a professional

setting. Depending upon the practice-based theories of learning examined the unit of analysis differs, moving from the individual and their learning process (Kolb 1976), to the group and even the institutional (Wenger 2000), but can also include units of analysis focused on boundaries between groups of individuals, especially the effect of interactions at the boundaries (Trowler and Turner 2002, Engeström, Engeström et al. 1995). To understand student work placements and their learning experience is to place it within this theoretical landscape. CHAT and its attendant Change Laboratory methodology provide a theoretical lens by which to understand how the individual experiences learning through social activity (Virkkunen and Kuutti 2000) – but also a tool which can actively facilitate transformative change (Sannino 2011b, Haapsaari, Engeström et al. 2016, for a discussion of transformation in CHAT see Davydov 1999) through enabling transformative agency (Sannino, Engeström et al. 2016b).

2.2. Cultural Historical Activity Theory

Engeström frames CHAT as an answer to ‘The Learning Paradox’ – how one structure generates another structure more complex than itself (Engeström 1987, p52, and through examining expertise in Engeström, Engeström et al. 1995). Engeström expresses this paradox thus: ‘Does the learning paradox lie in understanding internalisation?’ (Engeström 1987, p54, Blunden 2007). In essence he is asking if learning is purely a phenomena of the mind. He is concerned with how the external world (the societal) fits with the internal world (the mind) and how the temporal progression of internalization/externalization generates change (Edwards 2005, Daniels 2009). In addressing this paradox

Engeström (1987, p61) suggests 'activity' as the solution. He seeks to define the smallest structural form of 'activity'; he examines how 'activity' can be analysed in terms of its dynamics and transformations and investigated within its context, ultimately revealing it as a culturally mediated phenomenon.

Common amongst the varying strands of Activity Theory is the notion of object centred activity as the base unit of analysis when understanding social phenomena (Virkkunen and Ahonen 2011). To understand activities, it is argued, we must: move beyond the individual to the collective; from a snapshot in time to transformation over time; and towards a focus on the formation of theoretical concepts (Morselli, Costa et al. 2014). Activity is the fundamental building block of individual consciousness via a process of internalising the societal. Tolman (1999) makes a clear distinction between social and societal where the former is a reference to the mere social nature of the relationship we each have to other individuals as opposed to the societal nature of the human individual that exists in the division of labour arising from, and reproduced through, society's institutions "*...most notably those associated with the educational function, such as schools, libraries and other cultural forms.*" (Tolman 1999, p72). The cultural aspect is of critical importance here because an act cannot be separated from a set of values and norms defined by the culture in which that act occurs.

Therefore, understanding the outcomes that arise out of student work placements - and especially the variation in their results - could be reformulated as unpacking the internalisation process of the students via their

societal interactions whilst on placement. An individual's behaviours (the outcomes) are shaped by their consciousness and that consciousness is shaped by their activities (Engeström and Miettinen 1999, Blunden 2007). When a student learns something in the workplace they are not simply observing and mimicking the actions of others, there are many other components they absorb beyond the observable actions, components that are related to a set of cultural resources (Vianna and Stetsenko 2006). To more completely appreciate how CHAT addresses this process we need to explore how its theoretical basis explains the internalization/externalization dichotomy.

2.3. They all went into the Ark three by three: Dyads, Triads, and Triangles

In the origin story of CHAT detailed in *Learning By Expanding* (Engeström 1987), we can detect five threads of thought tightly woven together to produce a theoretical basis for the Change Laboratory methodology adopted in this study. For those familiar with CHAT, the instrument many are conversant with is the triangle and it is this graphical form that lies at the heart of CHAT (Engeström 2001). An appreciation of the role of the triangle lies in the first two strands of thought and how they shape CHAT. The triangle is not simply a convenient shape but represents an argument against a dualist approach to understanding *human* lived experience. The use of the triangle (as triad) is not simply in the connecting of three elements, but lies in the nature of the relationships seen within the triangle, the idea of mediating relationships (Edwards 2005, Virkkunen and Ahonen 2011). The third and fourth theoretical components of CHAT are closely linked and explore the dominance of the material world over that of the psychological world, and the dominance of the

social over the individual (Daniels 2009). Finally there is the genesis of the various components of the Activity Systems (AS) Diagram (Daniels, Cole et al. 2007) forging the final form of the triangle we see in many scholarly articles.

The first four theoretical strands are the ontological component of CHAT addressing the nature of the relationships between the components of activity. The triad as a form of relationship, the mediated nature of relationships, and a distinctive stance to the material and social worlds characterise how it is to exist. The final strand, represented by the AS, is the epistemological component. The various components of the AS are a realization of the CHAT ontology; the AS is a tool to explore the world of CHAT for 'truths'. Exploring CHAT through these theoretical strands exposes how the ontological roots shape the epistemological representation exposing gaps and weaknesses in the CL as a methodology. What follows is a close analysis of Learning By Expanding focusing on Engeström's interpretation of a number of different theoretical concepts to develop the basis for CHAT. It is accepted that there may be issues of interpretation, both linguistic (Gillen 2000) and conceptual (Holzman 2006) that influence the theoretical development of CHAT but here it is the result of interpretation that is being assessed rather than any actual mistakes in translation or differences in theoretical emphasis.

2.3.1. The rise of the Triangle: Dyad and Dualism, Triad and Monism

In Learning By Expanding (Engeström 1987) the notion of the triangle and how often we see this form in CHAT is a manifestation of the formal position that CHAT has regarding the monist/dualist debate (Edwards 2005). CHAT is

clearly a non-dualist form of ontology perceiving no separation between the ideas in our head and the material world around us. It is in examining a monist view of human development that the triangle finds its place where it is suggested that the triad is a minimal form of relationships to explain phenomena rather than a reduction into sets of dyadic relationships. It is this triadic approach to 'what it is to exist' that appears to underlie the utilisation of the triangle as both an explanatory philosophy but also as an epistemology for testing and acting on the world.

Through Pierce Engeström (1987, p62) initially reaches out to ground CHAT in a triadic relationship. For this Engeström examines Pierce's triad consisting of an object of interest, the mental interpretant and a sign. These three form a coherent, bounded minimum for examining the way in which an individual intentionally thinks and then acts. *"The triadic relation is not reducible to independent dyads. Otherwise, the dynamic character of the triad is destroyed..."* (Engeström 1987, p63). Engeström builds on this foundational idea of the triad through the work of Ogden and Richards who propose an alternative triad of 'thoughts, words and things' (Engeström 1987, p64). We can see in these first two strands of thought the embodiment of the triangle. It is not simply that there are three components, but that these components are in a *triadic* relationship where the three shape one another in an interlocking manner and that none of the three are in a dominant position but affected by the other two (Engeström 2001).

As Engeström continues to develop this cognizance of the triadic relationship he pulls Popper and his 3 World construct into the argument - "*the most well-known version of triplicity*" (Engeström 1987, p67) - as a counterpoise.

Engeström argues that Popper in fact reduces the triangle to two dyads and in doing so 'destroys' the interaction between the three components - the three worlds - disrupting, through the autonomy of each world, any systemic understanding of the triple (see figure 2.1). This is a dualist concept of the three rather than the monist proposition that Engeström offers. Engeström is using Popper to help clarify the idea of the triad by showing the difference when placed in opposition to a simple reduction of the three to two sets of dyadic relationships.

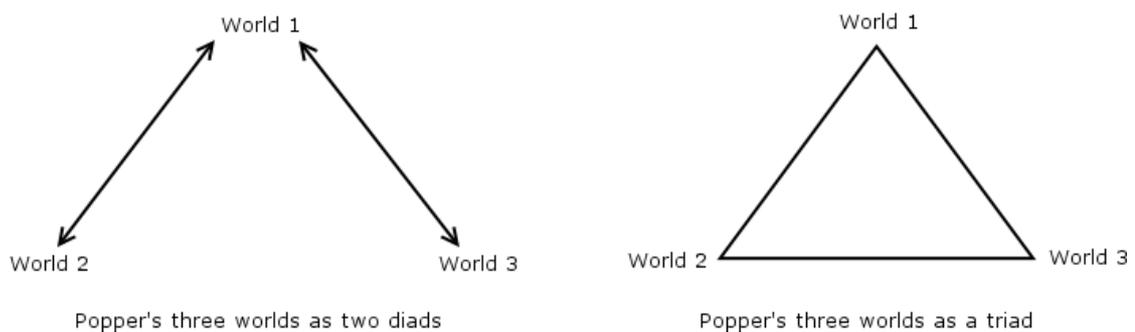


Figure 2.1 Two dyads or a triad?

This notion of a reduced dyadic relationship introduced through Popper is further utilised, but then assimilated, when Engeström considers the Neo-Meadian idea of Intersubjectivity from Trevarthen (Engeström 1987p, 75). In his discussion of Trevarthen's primary and secondary intersubjectivity we can see an attempt to link dyadic reductionism to a more complete triad by a proposition that a dyadic reduction is actually an immature form of human development. Engeström, by using Trevarthen, implies that a dyadic separation of the three is a non-systemic version of the triple and in it's incompleteness

looses the 'unique complexity' of human society (Engeström 1987, p75) and is an inferior form of relationship. CHAT isn't a simple repudiation of dualism, but enrolls it as a part of an individual's development – that a dualistic relationship exists at a given point in an individual's intellectual growth, but for a mature intellect it is the 'superior' triadic relationship that comes to dominate.

In Vygotsky we see the apparent culmination of this notion of triads of components graphically represented as triangles (Engeström 1987, p78). The Vygotskian triangle is the complex stimulus-response through 'X' - a mediator. This is sometimes shown as the subject, object, artefact triad in other literature surrounding CHAT (exemplified by Nussbaumer 2012, Roth and Lee 2007, and Mukute 2015, p52). The reformulation of this stimulus-X-response process as the subject–object-mediating artefact triad, reinforcing the idea of a triangle, ignores an important feature of these Vygotskian relationships. If we look at the stimulus-X-response formulation graphically it is often depicted as having a dotted line rather than the solid line utilised in the preceding theoretical developments (and in the subject, object artefact formulation). This is an important aspect of the CHAT ontology to be further explored in the next section.

Another triplet examined by Engeström is Leont'ev's activity, action, and operation (Engeström, Rantavuori et al. 2013, Bakhurst 2009). The relationship between the three elements is explored at length where activities are defined as an accumulation of actions (Engeström 1987, p85), and actions are defined as not being activities. *"Human labor, the mother form of all human activity, is*

co-operative from the very beginning. We may well speak of the activity of the individual, but never of individual activity; only actions are individual"

(Engeström 1987, p84). Engeström is careful not to define an accumulation of actions as a simple 'additive unit', but that activities only exist as chains of actions (Engeström 1987, p85, Engeström 2000). Operations are the concrete, context specific, sometimes unconscious, and conditional steps required to meet the conscious, goal oriented needs of an action (Engeström 1987, p85, Engeström, Rantavuori et al. 2013). At first glance these three appear to be just a hierarchical list of components but the interconnected nature of activity and action are examined in the idea of *objective transformation* where, under certain conditions, an action can be promoted into an activity "*For Leont'ev, activity is a systemic formation in constant internal movement.*" (Engeström 1987, p86). Sannino (2011a) further expands on this complex interaction of activities and actions as distinct yet unified phenomena. Interestingly in Leont'ev's formulation Engeström laments the lack of a graphical model, "*Vygotsky's model of the instrumental act [...] was not graphically superseded in Leont'ev's work*" (Engeström 1987, p87), presumably missing the all-important triangle as a connective aesthetic.

The triad primarily provides the function of interpenetrating and interlocking components; the way in which Engeström discusses biological adaptation (Engeström 1987, p91) makes this explicit as he discusses Lewontin's organism's construction of its own environment.

"The adaptive nature of animal activity does not mean passive acquiescence in the demands and pressures of nature. As Lewontin (1982, 160-161) shows, organisms and environments always penetrate each other in several ways." (Engeström 1987, p91)

It is this interpenetration of the different components that provides the basis for understanding social dynamics and demonstrates the importance of the triad in CHAT. The relationship between the three is systemic, that is, inseparable as two or even three dyads, but only seen as a single triad, the triangle as a whole.

2.3.2. The Triangulation of contingent mediated relationships

Whilst driving home the importance of the triad, and therefore the importance of the triangle as a graphical form, Engeström also examines the nature of this relationship; what the corners represent, and what the lines linking the corners represent. This layering of the nature of the relationships over the basic triad adds an extra dimension to the analytic possibilities of CHAT by demonstrating something beyond interpenetrating components to the way the interlinking of said components works in an historical and cultural dynamic.

We have seen how Engeström has constructed the triad as a systemic, interpenetrating and interlocking relationship and is, in part, the basis for the triangle so treasured in CHAT. Engeström's discussion of Pierce makes it very clear that this triple isn't only a triadic relationship, but can also be considered as a mediated relationship (Engeström 1987, p63). That is, one component

doesn't relate directly to another component in the triad, but relates through a third component. Through Pierce Engeström uses the ideas of **vectors** to initially develop the idea of mediation.

"There are two vectors in this dynamism. First, there is the vector of representation pointing from the sign and interpretant toward the object. Second, there is the vector of determination pointing from the object toward both sign and interpretant." (Engeström 1987, p63)

He further uses a passage from Parmentier (1985 cited in Engeström 1987, p63) to show how these **vectors** shift the roles of sign, interpretant and object as these vectors are applied across the three components leading to an 'endless series' of approximations of the object. This implies a relationship on top of the triad that dictates the nature of the relationship between the different components. Furthermore, Ogden and Richards focus on the meaning of the line between the word and thing (Engeström 1987, p64). Here they make a distinction in the nature of the relationship between a symbol (word) and an object (thing) as opposed to the relationships between thoughts and words and thoughts and things. The former relationship, Engeström argues, is indirect and only connected by the other two sides of the triangle.

"This means that there is no direct correspondence between the symbol and the thing it symbolizes, or between words and things. Their relation is always constructed by man and thus historically changing." (Engeström 1987, p64)

Clearly Engeström is once more highlighting the notion of mediated relationships, but he goes on questioning the nature of the other two direct relationships in the triangle.

"Can these two relations really be direct? Consider first the relation between thought and symbol. Symbols are socio-historically produced and transmitted artifacts. They are abstracted and generalized from the production and use of material tools and objects. The relation of an individual to a symbol appears direct. But the cultural development of symbols can never be understood in direct individual terms. It is a super-individual, collective process, based on the mediated, indirect interaction of subjects with symbols via objects (referents). Also the individual grasp and use of symbols originate from practical encounters with the world of objects which the symbols represent and stem from." (Engeström 1987, p65)

This echoes the moving **vectors** of Pierce formulated earlier in the text and underlines the differences of emphasis on the triadic relationship and the mediated relationship. In Vygotsky we see a similar formulation to Ogden and Richards when discussing the bottom line as Vygotsky explores the mediation of X in the S-R relationship moving from a simple stimulus-response process to a complex mediated act (Engeström 1987, p77, expanded on in Prenkert 2010). From the usual graphical representation (figure 2.2) we can see that not all sides of the Vygotskian triangle are equal represented by the dotted

line connecting the stimulus and the response (Prenkert 2010 shows a similar formulation for Ogden and Richards).

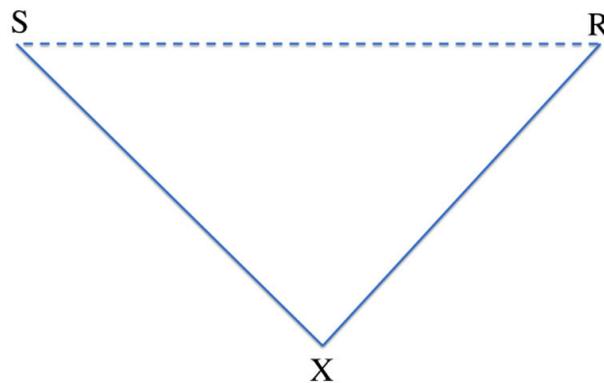


Figure 2.2 Vygotsky's Complex Stimulus Response process (adapted from Sannino 2011a)

It is stated that the mediating relationship 'inhibits' the direct relationship between stimulus and response, that the mediating relationship isn't a simple additive one nor is it an improvement on the stimulus response relationship, but is an external pathway ('**vector**') of behaviour control (Engeström 1987, p78, explored further in Edwards 2005). In Leont'ev we see further expansion of mediation and the development of the idea of the 'shared object activity' and of social mediation (Engeström 1987, p85, Blunden 2007) providing the externalising component in the learning paradox delivering the potential for creativity (Engeström 1999a).

The form in which this pathway is realised for Vygotsky is that the mediated act moves from mediation as thought (Pierce, Ogden and Richards, Mead) to mediation as an instrumental act - working through the use of tools as mediating artefacts (Engeström 1987, p78). Engeström describes Vygotsky's tools as the technical and psychological and then links several lines of thought.

"I would contend that this formation of psychological tools (= secondary instruments) through the combination of previously separate gestures and technical tools (= primary instruments) is actually the essence of what Mead called the emergence of 'significant gestures' or 'significant symbols' and of what Trevarthen calls 'secondary intersubjectivity'." (Engeström 1987, p79)

We now have a line of reasoning connecting mediation to the idea of the systemic interlocked triads. However, in this line of reasoning we can detect a tendency to make such connections in a hasty manner that, as a by product, have the effect of obscuring important differences in two threads of thought and therefore the potential to obscure aspects of the dynamics of CHAT taken as a whole and for CHAT to miss important considerations in cultural-historical dynamics. This tendency to use similarities to draw wider conclusions is highlighted in Engeström's equivalence of Vygotsky's psychological tools and Wartofsky's secondary artifacts - repeated when he criticises Zinchenko tool-mediated action (linking it to Vygotsky's instrumental act) as lacking consideration for the affective dimension of human action.

"Tool-mediated action in no way solves the problems of motivation, emotion and creation. To the contrary, it seems that both meaning and tool-mediated action are formations of the same structural level. This is the level of goal-directed individual cognition, the 'rational level' of human functioning. The problems of motivation,

emotion and creation seem to be unanswerable on this level. They belong to a higher, collective and - paradoxically - less conscious level of functioning." (Engeström 1987, p81)

Vygotsky's concept of the instrumental act and Leont'ev's depiction of social relations mediating between activity bring us to the third and fourth strands in CHAT. Where is the activity situated? Is it of the mind or is it of the physical world? In the discussion we have also seen the questions regarding the relationship between the individual and society. Is society shaped by the interaction of individuals, or is it the case that the social world shapes the interactions of individuals? Having explored triads of mediating relationships we now examine the material and the collective in CHAT.

2.3.3. The material world over the world of ideas – the social over the individual

An important part of CHAT's perspective on human activity is the dominance of the material world over the world of ideas, and of the dominance of social life over the life of the individual. For Engeström, Pierce plays an important role in the development of the idea of the triadic relationship, and identifies mediation through the use of vectors. Engeström, however, exposes difficulties relating to where Pierce situated both the triad and the mediating components of his model. In examining Pierce's conceptual application to human action Engeström identifies:

"... the first fundamental problem in Peirce's conception. The mediating sign is here, in the context of human action, treated as

something purely mental and intentional. It thus loses its potentially anti-Cartesian, cultural quality and reverts to individualism and rationalism." (Engeström 1987, p63).

Pierce's neglect of the physical, seeing communication only as a medium to translate 'thought signs' to another individual, firmly plants his ideas in the realm of the individual, and in the realm of the mind. Engeström also notes Pierce's separation of the form and content of signs relegating the form to a *"blind vehicle for communicating meanings"* (Engeström 1987, p64). These two problems leave open questions of how we act as social beings and how the physical and mental worlds interact (Sannino 2011a).

It is through discussion of Ogden and Richards that Engeström begins to develop a social strand in the triadic arrangements.

"But the referring is always done with some means - gestures, pictures, words, other objects, - which must be communicable and understandable to at least some other individuals. The act is not direct, not even when it proceeds automatically. The mediating cultural instrument is there, whether the subject is conscious of it or not." (Engeström 1987, p67)

In that idea of a 'mediating cultural instrument' we see the genesis of the social (cultural) component because communication cannot be blind, if it were

it wouldn't be communication. Still the idea of thought as the prime mover in triadic relationships is criticised (Engeström 1987, p67).

It is through the symbolic interactionism of Mead that Engeström further develops CHAT's social and cultural connections. Rather than looking at the manner in which individuals interact and through their interactions make society, Engeström argues that Mead instead postulates that to understand individual behaviour it is necessary to start by looking at complex social phenomena and looking at the way in which the individual aligns to the social situation (Engeström 1987, p70). This is a significant difference in the way in which the preceding theorists in Engeström's lineages discussed the individual, but it also provides a mechanism by which the physical world begins to interact with the mental world.

Engeström identifies two central tenets of Meadian symbolic interactionism; 'social objects' and 'social consciousness to physical objects' (Engeström 1987, p70). The construction of physical objects is social, and occurs through communicative processes (Engeström 1987, p71). The communicative control of actions *"means here control of interaction between people. Objects to be worked on and molded into useful artifacts by means of instruments play an accidental role, if any"* (Engeström 1987, p74). For Engeström, this notion of construction of physical objects as an act of communication is contentious.

"It is instructive to compare Mead's conception with those of Leont'ev and Tran Duc Thao. These authors agree with Mead on

the constructed nature of objects. But they disagree with Mead on the interpretation of construction as mere communication and symbolization. For them, the construction of objects is above all sensuous, material construction by means of tools, i.e., production. Communication and symbolization are seen as derivative, though organically intertwined aspects of production." (Engeström 1987, p72)

Communication is seen as a result of the need to produce (Engeström 1987, p73). Through Trevarthen's secondary subjectivity Engeström sees in this Neo-Meadian position equality between the physical and the communicative (Engeström 1987, p76).

In Vygotsky we see the argument approach its conclusion as the direct impulse to act is inhibited by the mediation of the technical and psychological tools of *instrumental acts*. It is the idea of acting rather than simply communicating that the role of the physical world starts to more fully form through the *instrumental act* (for further discussion see Bakhurst 2009). It is in the act of production itself that the use of technical tools and then the use of psychological tools to enable their use arises. *"The essence of psychological tools is that they are originally instruments for co-operative, communicative and self-conscious shaping and controlling of the procedures of using and making technical tools (including the human hand)."* (Engeström 1987, p79). We don't produce because we communicate and think, we think and communicate because we produce - and so that we can better produce

(Lektorsky 1999, Miettinen 2006, Langemeyer 2015). Through Zinchenko Engeström creates a connection between tool-mediated actions and meaning (Engeström 1987, p81) and the idea of internalisation is further shaped (for further discussion see Davydov 1999).

It is through Leont'ev that Engeström brings these two threads together to form the last points in CHAT's ontological development. By placing activity at the centre of social interaction Leont'ev establishes the object of activity, an object that is the 'true motive' of an activity and because of the opaque nature of the division of labour this motive of activity is often obscured for the individual, the *"total activity seems to control the individual, instead of the individual controlling the activity."* (Engeström 1987, p84). This 'shared object activity' contains the materialist and social basis for CHAT (further developed in Kerosuo, Kajamaa et al. 2010, and Stetsenko 2005) where meaning arises in a socially negotiated form (Ponti and Ryberg 2004) and lays open the potential for the epistemological construction of a model whose main purpose is to analyse and intervene in activity (Sannino, Engeström et al. 2016a, Sannino, Engeström et al. 2016b). Tolman (1999) characterises a social/societal dichotomy and just as dualism has been described as an immature relationship to the world, the societal relationship supersedes an 'inferior' social relationship between individuals.

The four threads described above drive home the idea of the triangle as a key aesthetic for the developing CHAT, and layer over this triadic form a sense of a mediated and contingent relationship rooted in the material and social world

of lived experience. From these key tools of triad, mediation, material and social to explain internalisation/externalisation Engeström turns next to the evolution of human culture to create the basis for the configuration of the Activity System (AS).

2.3.4. The components of Activity

The development of the AS uses a triad for biological adaptation developed by Lewontin (Engeström 1987, p91), a formulation linking the ontogenetic and the phylogenetic. Adaptation is connected to species development where 'species' moves beyond a system of classification to a 'methodology for survival' where the *"prototype and the procedure define each other in a complementary manner"* (Engeström 1987, p91). Species (prototype) and biological adaptation (procedure) are a single contingent phenomenon – they are interpenetrating. Engeström then turns to a number of authors to explore a 'rupturing' of the sides of this adaptation triangle through the use of tool, ritual and a division of labour (Engeström 1987, p92). It is argued that in the evolutionary unification of these ruptures human culture is seen to arise.

"The breakthrough into human cultural evolution - into the specifically human form of activity - requires that what used to be separate ruptures or emerging mediators become unified determining factors. At the same time, what used to be ecological and natural becomes economic and historical." (Engeström 1987, p93)

This transformation to the ‘economic and historical’, it is argued, gives rise to surplus production and the attempt to control that surplus production leads to complex systems of societal relationships justifying specific forms of distribution (Engeström 1987, p96).

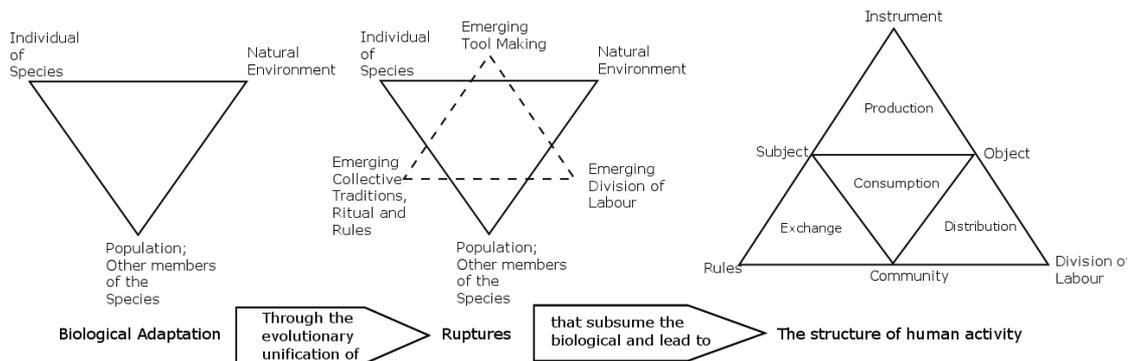


Figure 2.3 The rupturing and subsumption of biological adaptation produces the activity system

A rapid transformation of the triangle of biological adaptation and the triangle of evolutionary ruptures produces the Activity System diagram (Engeström 1987, p94). The original adaptive triangle becomes the consumption triangle shrinking to be bound by the evolutionary ruptures triangle signifying the subsuming of consumption to production (Engeström 1987, p94, Sannino 2011a). Where consumption meets evolutionary ruptures, three further triangles labelled production, exchange, and distribution appear. Although it seems to be a graphical sleight of hand, the AS triangle is rooted in the 4 ontological threads containing within it a series of triads, mediating relationships and a basis in material and social conditions providing an analytic whole for the gauging of, and intervention in, human activity (see figure 2.3).

"The model suggests the possibility of analyzing a multitude of relations within the triangular structure of activity. However, the essential task is always to grasp the systemic whole, not just separate connections." (Engeström 1987, p94)

Extending Parmentier's shifting vectors, Engeström argues that these sub-triangles can also be considered as full activities with the AS emerging within any sub-triangle. A fractal landscape materialises from the AS producing a form of self-similarity as an organising feature at different societal scales (Engeström 1987, p96).

In CHAT human culture is a result of a complex form of adaptation embodied in an iterative, contingent unification of adaptive behaviours. It is in the disruptions generated as organisms adapt their environment to be more favourable to survival, and then, in turn, they biologically adapt to make this more efficient, that history is produced. The rise of complex societal relations from simple social relationships is a function of the struggle to control a surplus of production. It is in these socially constructed understandings and justifications for particular forms of social relations (the societal) that individuals make sense of their lived experience. Individual consciousness derives from a sense-making process focused on productive activities shaped by the various instruments and tools that permeate activity (Kontinen 2004, Kerosuo and Engeström 2003). It is not the picking apart of the components and relationships, but the understanding of their unity that helps us depict learning as a social phenomenon. This theoretical construct and its attendant

analytic tool provide structures through which to analyse, make sense of, and intervene in, student learning whilst they are on placement capturing the specificity of individual experience as an expression of collective experience (for further discussion see Daniels and Warmington 2007).

However, with a focus on form we may find certain analytic possibilities in CHAT may be lost. The triangle, although a useful graphical tool, can lead to the subordination of a fuller exploration of the potential for CHAT to an aesthetic choice. For example, within the AS triangle there are 4 sub triangles discussed - production, consumption, exchange and distribution. These comprise of:

- Production - subject, object, artifacts
- Consumption - subject, object, community
- Exchange - subject, rules, community
- Distribution - object, community, division of labour

But what about many of the other possibilities in this configuration such as:

- Subject, object, rules;
- Subject, object, division of labour;
- Subject, artefacts, rules;
- Subject, artefacts, community;
- Subject, artefacts, division of labour;
- Subject, community, division of labour;

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- object, artefacts, Division of Labour;
- object, artefacts, community object;
- artefacts, rules, division of labour.

Thus, the artefacts through which subjects make sense of the object mediate the subject's relationship to the object of the activity. Nevertheless, that isn't the only mediated relationship here. It can be argued that the subjects understanding of a set of artefacts can only be understood through the mediation of the object of the activity, but also their community and even through the division of labour. There is a potential multitude of mediations within the triads (Engeström 1987, p65). This is further explored in (Prenkert 2010) as decontextualized action and contextualized collective activity – but in creating this distinction Prenkert exemplifies this constraining of the relationships between various components in a manner that contrasts direct and mediated relationships rather than seeing all as potentially mediating factors, so, for example, denying the possibility that rules can be mediated by the community or even the division of labour.

This merging of the triad and the mediating relationship has the potential to form one dimensional interaction within the 'triangle' of the AS - as the multitude of relationships are collapsed into the AS. The form dominates the analysis rather than enabling it (something Engeström criticises in Pierce - Engeström 1987, p63). This one-dimensional trap can be seen in a variety of articles (Virkkunen and Kuutti 2000, Zurita and Ryberg 2005, Macdonald 2006, Kerosuo, Kajamaa et al. 2010, Prenkert 2010, for further discussion see

Bligh and Flood 2017). In the literature we see the triangle being forced to one side, even though concepts from the AS are utilised, so that a complex dynamic lacking in the triangle articulation can be demonstrated (Engeström 2000, Engeström, Kajamaa et al. 2015).

Further examination of the discussion of the mediating relationship helps uncover more potential. When considering mediating relationships the term '**vector**' has been purposely emphasised to amplify the connection between Pierce and Vygotsky and provide a lens through which we may glimpse theoretical obfuscation. In Pierce we see shifting relationships between the components of a triplet and in Vygotsky we see the mediated relationship as a pathway of influence providing a culturally functional override to biological imperatives. The term vector can be used in two ways, one as a quantity having two components (e.g. velocity as opposed to speed), but it can also be used to mean a carrier for a 'transmittant' - for the transmission of disease by an insect for example. In this dual formulation we can interpret the potential to see mediating relationships as ones that provide a pathway of influence that is shifting in direction between the components of a triad (and remediation reversing the flow of influence and an important part of internalisation externalisation see Virkkunen and Kuutti 2000, Edwards 2005, and Lecusay, Rossen et al. 2008), but they may also shift in the strength of the influence. Although the idea of shifting pathways of influence in mediated relationships is clear in CHAT, the idea of a magnitude of influence is underdeveloped.

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To examine this concept we can draw an analogy between an aircraft in flight and the process of mediation. In this analogy the line linking the current position of the aircraft to the target destination represents the dotted bottom line of Vygotsky's mediating triangle, the direct connection between two components. The airspace the aircraft travels through represents a mediating artifact acting as the carrier for a transmittant (airflow or more simply a wind) seeking to influence this intended direction of action. When an aircraft is flying between points on a map it follows a vector consisting of direction and speed. An aircraft's actual flight vector is very rarely directly oriented on the target destination, but is determined by another vector, that of the wind (again with direction and speed). Any difference in the magnitude of either component of the wind's vector will affect the aircraft's actual flight vector (see figure 2.4). The wind in that airspace (the transmittant in the mediating artefact) acts to mediate the aircrafts direction of travel influencing it not just because it exists, but as a function of the magnitude of the vector components. In this illustrative example we can begin to see how one vector can influence another, but more than that a vector's magnitude shapes the power of the effect – a mediator therefore contains both meanings of a vector, it is a carrier for a transmittant but also a quantity with magnitude and direction. The equilateral triangle morphs into something more scalene.

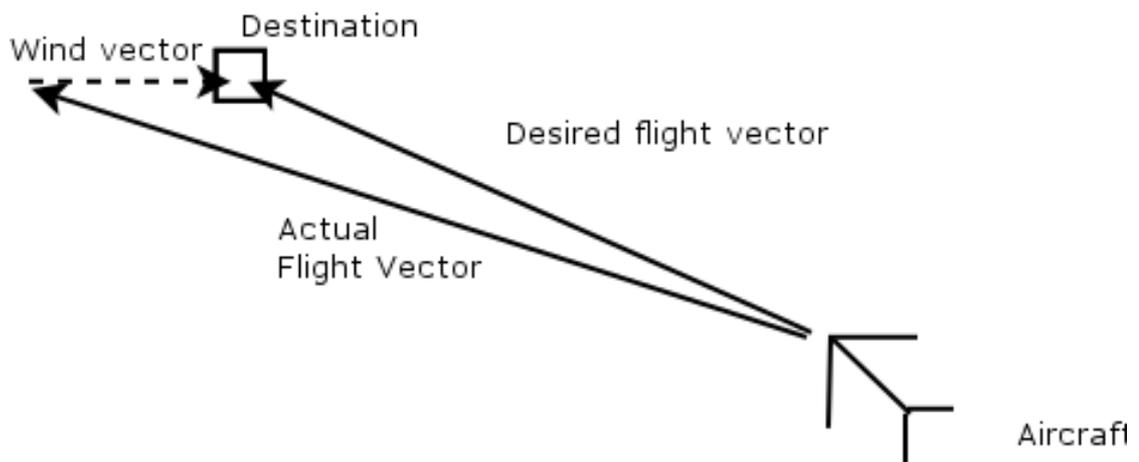


Figure 2.4 How the wind vector affects the aircraft actual flight vector

If we then bring these two components together we can see how the mediated relationships that a subject experiences can be multiple, and that the strength of influence can differ for each of the relationships. This influence may also change over time shaped by other triads in the AS. So, community, object and division of labour shape a subject's understanding of an activity's artefacts. The subject, community and division of labour are also a triadic relationship. Changes in the division of labour (e.g. a promotion) may lead to a different relationship between the subject and the community and this in turn may affect the level of influence the community has on the relationship the subject has to the activity's artefacts and therefore the level of influence the artefacts may have on the relationship between the subject and object of the activity (discussed as intersubjectivity/intrasubjectivity in Stetsenko and Arieviditch (2004) making sense of the subject in this process). There is a swirling, endless series of shifting influences (internalisation/externalisation) as the activity moves across time (Engeström 1999a) and we can see how Leont'ev's formulation of objective transformation is rooted (Engeström 1987, p86). Engeström (2000, and 2012) captures this movement of influences in his concept of 'knotworking'. The "multivoiced" nature of an activity system, where

each individual has a different perspective (Virkkunen and Kuutti 2000), may, in part, stem from the different strength of influence individuals may experience from the mediating factors that envelop them (potential for this interpretation is opened up in Engeström 2007a, and a special issue of the International Journal of Educational Research - see Williams, Davis et al. 2007).

Engeström discusses the sub-triangles as potential activities in their own right. The ideas of an artefact producing activity, and subject producing activities have been discussed (Virkkunen and Kuutti 2000, Engeström 2001). The simplicity of the AS triangle acts to divert attention away from these complex relationships and, for example, in doing so lose important characteristics of societal relations relating to power (Avis 2009) wrapped up in justifications for a particular form of distribution of surplus, social, production. Power is not simply about positions of authority (e.g. division of labour), but could include the confidence to utilise mediating relationships to perform acts of power even subverting existing power relationships (for an extended discussion of power in CHAT see Kontinen 2004). When we talk about 'magnitude of influence' within a mediating relationship we are discussing a balance of forces within a complex of triadic relationships that constitute an AS. At any point in the AS there could be shift in the strength/direction of a specific mediating relationship that alters other triads building a powerful, but transient, force for change (often discussed as contradictions, see for example in Kerosuo, Kajamaa et al. 2010). It is these changes in the forces/influences within the AS that the CL

seeks to exploit driven by an awareness of, and an attempt to harness them to enact change (Engeström, Rantavuori et al. 2013).

2.4. Conclusion

Here we have looked at how placements as a distinct component of education has been limited to its benefits with respect to academic achievement, career development and progression, skills and capabilities development, but appears to miss out an examination of the mechanisms at play in producing these possible benefits. It is in this underdeveloped aspect of understanding the placement experience, specifically its impact on learning, that the research question lays.

CHAT is a theoretical framework to understand learning and through its origin story we can detect five threads of thought. Four ontological strands are the theoretical basis of CHAT and a fifth epistemological strand provides the connection of this theoretical base to empirical study. The first two ontological strands explored define human activity as a set of monist relationships that are triadic, mediated and material in formation. It is within these two descriptions of relationships that provide the distinct use of triangles in CHAT. However, it is in the use of this particular aesthetic form that the potential for misunderstanding can arise. The triangle obscures all of the potential relationships that could be realized through the AS. Furthermore, the tight line of reasoning interweaving the triadic and mediated nature of the relationship promotes a simplistic understanding of the corners and sides of the triangle whereas there is a much more complex interpretation lurking and involves

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magnitude of mediation and self similarity at different levels within the relationships. This focus on the triangular form therefore has the potential to obscure aspects of the AS relationships, an example of which is the poorly developed notion of power.

Chapter 3. Methodological Considerations on the Investigation of Placement Transformations

This chapter will explore the use of the Cultural Historical Activity Theory and the Change Laboratory methodology to address the research question. By exploring the concerns of validity and reliability in qualitative research we can see the necessity of examining the reflexive development of the methodological approach outlined here as a foundation for the methods and research instruments chosen. Explaining the initial reasoning behind the choice of methodology is the starting point for appreciating the choices that have been made.

Once the original motivations for choosing CHAT/CL have been documented we can explore the theoretical basis for CHAT/CL, building on the previous chapter. I will examine the centrality of activity and what it says about developing student consciousness through the process of mediation. The link between student transformations, variations in outcomes and activity will be then explored focusing on internalisation/externalisation. Having examined this intersubjectivity the transformative process of Expansive Learning will be considered alongside the role of contradiction in the student experience. The need for an active intervention must also be explored and how the CL seeks to drive awareness of contradiction and empowers the collective to make changes to their activities and highlight the importance of the coproduced outcomes in uncovering the student experience of both the placement and the CL. Finally critiques of CHAT/CL will be examined further and the theory testing/development focus of this research emphasised.

3.1. The Role of Validity and Reliability in Qualitative Research

The literature surrounding these two components of high quality research (Stenbacka 2001, Md. Ali and Yusof 2011) details differences between their application in quantitative and qualitative research (Winter 2000, Noble and Smith 2015), many differences in the use of terminology (Hammersley 1987) and the implications of the use of such terminology (Cho and Trent 2006). It is suggested that quantitative research is concerned with causal determination, prediction, generalisation and a disassociated objectivity, whilst qualitative research is depicted as focused on illumination, understanding, extrapolation, and embraces researcher involvement. For Patton (2002) the real world is not static and the researcher should be present to observe and record change suggesting that a duty of 'closeness' (Stenbacka 2001) compels the qualitative researcher rather than the obligatory 'distance' of the quantitative researcher (Winter 2000). These appear to be two very different ideals of research, and, importantly, of the researcher, and yet a conception of rigour can be found in both forms of research (for an in-depth discussion of rigour see Davies and Dodd 2002, and Cypress 2017).

Traditional quantitative interpretations of validity stress the 'truthfulness' of research often framed as 'does the research measure what it was intended to measure?' (Hammersley 1987, Stenbacka 2001). Has the research design targeted the research question maintaining construct validity (Golafshani 2003)? This further divided into internal validity (the exclusion of extraneous variables) and external validity (generalizability of findings) (Brink 1993, Winter

2000). Reliability, from a traditional quantitative position, is concerned with replicability and repeatability (Golafshani 2003, Stenbacka 2001) – can different researchers obtain the same results if the research was repeated? Rigorous quantitative research is truthful, generalizable and repeatable.

Validity and reliability in qualitative research replaces these ideas of truthfulness, generalizability and repeatability with notions of credibility, transferability and trustworthiness (Brink 1993, Golafshani 2003, Cypress 2017) and even 'goodness' (Emden and Sandelowski 1998). It is the credibility of the research instruments and of the ability and efforts of the researcher that are scrutinised. Reliability is an inherently difficult concept in qualitative research due to the sensitivity of context (Brink 1993). Validity in qualitative research is considered to be contingent, based in the processes and intentions of research methodologies and projects (Brink 1993). Satisfying the need for credibility under such conditions (and therefore establishing the rigour of the research) requires demonstrating dependability (Lincoln and Guba 1985). An inquiry audit exposing the process and product of research to scrutiny is required (Md. Ali and Yusof 2011). It is important to expose how the raw data was examined, the forms of data reduction used, and the process as a whole to allow interrogation by the research community (Noble and Smith 2015, Winter 2000, Cypress 2017). This reconceptualising of rigour must take into account subjectivity, reflectivity and social interaction (Stenbacka 2001, Davies and Dodd 2002, Golafshani 2003, Cho and Trent 2006), thus cultivating defensibility and confidence in the findings produced (Lincoln and Guba 1985).

Such interpretations accept that scientific endeavour lay not in the realm of the individual - researcher or project - but in the collective (Cho and Trent 2006). It is through open transparent engagement that rigour and quality emerge (Noble and Smith 2015). If we look at the quantitative studies surrounding the impact of placements (Duignan 2003, Mandilaras 2004, Gomez, Lush et al. 2004, Reddy and Moores 2006, Mendez 2008, SurrIDGE 2009, Driffield, Foster et al. 2011, Mansfield 2011) we can see divergence in methods and findings. Does that mean the individual studies lacked rigour or simply demonstrates the difficulty of isolating all extraneous variables? Which one of these studies, if any, is valid in a quantitative sense? Who chose the right research instrument? Is this not more a form of theory testing than a definitive search for truth as the research community examines these studies and consider them as an inclusive process of investigating the social rather than self-contained accounts of truth? To have engaged in rigorous research – both qualitative and quantitative - is to show that the chosen methodology and methods are suitable to the proposed research embodied in the research question. This necessitates transparency of process documenting the method and reflecting on its development, and accounting for researcher bias supported by reference to the existing literature highlighting similarities and differences (Brink 1993, Golafshani 2003, Noble and Smith 2015). Therefore to demonstrate rigour in the research detailed in this document I must expose my considerations when designing this research project and demonstrate alignment to the question I have posed.

3.2. Choosing how to address research questions

The choices we make regarding our own research ventures are often shaped by the pre-understanding we bring to an area of investigation (Stenbacka 2001). The primary research question – *‘How can a Change Laboratory research-intervention support a group of placement students to take abstract concepts of management theory and embed them concretely into their work practices?’* - presupposes that the best outcomes outlined in the placement literature can be attained through a specific approach to this research. The supplemental questions support the primary question in its inquiry by breaking out core elements assumed for such an intervention. There are many potential approaches to the examination of student transformations through placement practice. Phenomenography, for example, could help us understand the variations in transformation. Quantitative approaches through the use of survey instruments, or the qualitative use of interviews and focus groups, could all help explore the transformation process. Various forms of Action Research could be utilised to intervene in the placement exercise. But these various techniques all felt incomplete to me.

In deliberating on the research question I wished to pursue I reflected on what the methodological considerations behind research design are. That it should provide a basis for answering the research questions is the core consideration, but, arguably, deciding on a particular methodology could also provide a chance to further explore the methodology itself. Years of developing a placement venture for an undergraduate Business Management programme, and interacting with placement students, have left an impression that steer me in a specific direction (Davies and Dodd 2002). Reflecting on the undiscerning

observations generated by my own day-to-day practices supervising placement students I sensed phenomena that found resonance with the various constructs of the CL. From the 'binds' that students frequently find themselves whilst at work, to the tension between the academic and professional requirements of the placement, I witnessed their many struggles. I felt that much of my guidance as an academic supervisor was to aid awareness of the friction between theory and practice believing it would improve theoretical understanding and by means of situated sense-making create more nuanced practitioners (Ellis 2011, Reid, Ledger et al. 2015). The ideas of 'contradiction' and 'intervention' appealed to my own lived experience and channelled me towards the CL as a technique to help in my desire as an educator to improve the outcomes of the placement exercise. This study is not only an exploration of the changing student through workplace activities, but its aims also lay in the theory testing tradition to be found in research (for a similar methodological reflection on CL see Daniels 2004).

With CL's focus on conflict as a driver for transformation it lends itself to my experience of students' struggle with workplace and academic activities and the tensions they discover exist in professional practice (Morselli, Costa et al. 2014). CHAT proposes the concept of expansive learning to explain development through conflict and even seeks to exploit awareness of these conflicts to drive learning (Engeström and Sannino 2011, Engeström and Sannino 2012, Eri 2013). From the insights into the process of learning that transpire from the analysis of the outcomes of a CL intervention (Sannino 2011a) together with an active purposeful intervention in transformative agency

(Virkkunen 2006, Haapsaari, Engeström et al. 2016, Sannino, Engeström et al. 2016b), the CL is an attractive proposition when seeking to promote student development (Yamazumi 2014, Sannino, Engeström et al. 2016a). From these considerations of CL I find a methodological approach that appeals to my experiences as an academic supervisor of placement students and a research question I could connect with – the methodology drove the research question, but familiarity through intimate practice guided the choice of methodology.

3.3. The Change Laboratory and Placement Transformations: From individual consciousness to collaborative transformation

3.3.1. Activity and its role in student learning as developing consciousness.

The connection between consciousness and activity within CHAT make it ideal in the analysis of student learning whilst they are on placement bearing witness to the changes in consciousness they go through as they work. As previously discussed, the fundamental unit of analysis in CHAT is activity. Not an arbitrary choice of perspective for the purpose of analysis, but an underlying theoretical view on the nature of human consciousness (Holzman 2006, Prenkert 2010, and for an extended discussion see Virkkunen and Kuutti 2000). In CHAT consciousness is perceived to be in the realm of the individual and in a dialectical relationship with the societal (Tolman 1999, Avis 2007) - that is, although CHAT talks about consciousness as being an attribute of an individual, it is shaped through societal interaction but also shapes the societal (Daniels 2009), a dialectic of internalisation (Vianna and Stetsenko 2006, Engeström and Miettinen 1999) and externalisation (Virkkunen and Ahonen

2011). An individual doesn't just respond instinctively to complex stimuli, but responds through a set of mediating artefacts that arise from within a particular cultural setting (Macdonald 2006, Sundberg, Areljung et al. 2016). This provides a functional connection between agency and structure and informs a mechanism to understand human activity through cultural and historical circumstances (Engeström 2001, Virkkunen and Ahonen 2011).

Understanding an individual's response to a stimulus requires accounting for the cultural environment embodied in a particular set of artefacts. To comprehend a student's learning process as the subject of the placement activity necessitates an examination the role the collective has in their sense-making. Through the artefacts encountered in the process of their work the student undergoes a process of internalisation trying to make sense of their role in the world of work (Macdonald 2006, Saninno 2008, Sundberg, Areljung et al. 2016). If activity and consciousness are interlinked, then actively engaging in the students' mediated activities through the guided co-production of artefacts (helping to externalise the internal) will help shed light on their evolving consciousness elucidating the transformation that the placement fosters (Prektert 2010, Sannino 2011a).

3.3.2. The Relationship between Activity, Transformation and Variations in Student Learning.

Activity is an account of societal interactions embodying a movement between the external, the internal and back to the external and it is in this process that individual variation may be identified. To explore student learning during

placement is to unpack the course of the changing consciousness. The five principles of CHAT identified in the literature (Engeström 2001) provide shape to the practical expression of this movement:

1. An organisation is a collective, object oriented, artefact mediated activity;
2. Cognition is distributed within the community, its tools, its division of labour, and its rules;
3. An AS is a source of multiple and potentially conflicting points of view;
4. An AS is shaped and changes over time;
5. And conflicts and contradictions are possible sources of transformation.

To say an organisation is object oriented is to identify the moment around which the internalisation/externalisation dichotomy rotates (Blunden 2007, for an extended discussion of the 'object' see Foot 2002). An object is that part of an activity to which an act is directed (Engeström 1995, Johansson 2014, Engeström, Kajamaa et al. 2015) and around which motivations are centred (Eri 2013, Miettinen 2014, Haapsaari, Engeström et al. 2016) - *'the object engages and motivates intentional participation'* and is the focus of transformation (Douglas 2012, Sannino and Ellis 2014, Sannino, Engeström et al. 2016b). Through activity focused on an object an individual makes sense of the world, but that object is also the manifestation of contingent collective meaning making (Kerosuo, Kajamaa et al. 2010), it is a point of intersubjectivity (Stetsenko 2005). So the prospect for tensions between personal sense-making and public meaning-making (Edwards and Thompson 2014) can be admitted, generating a dialectical relationship where both the subject, collective

and activity have the potential for change (Virkkunen and Kuutti 2000, Sannino 2014) but this is by no means unproblematic (Daniels and Warmington 2007).

This approach, although providing a more historically contingent – and dynamic - picture of learning at a meso level, appears to assimilate the individual into the collective endeavour where learning is not just social in its formulation and mechanics, but, it could be argued, social in its outcomes. This relegation of the individual to a part in wider learning phenomena is a potential source of transformational conflict (Engeström 2001). Here the societal directs and benefits from progress, but the individual's learning outcomes are at best coincidental and at worst expedient to the dynamics of continuously developing social practices. Yet it is in this formulation that the societal effects on an individual's developing consciousness can be detected and that the behavioural manifestations of this consciousness – their actions - in turn, ripple out through the activities in which the individual participates (Ellis 2008). Variations in student outcomes from participation in placement activities are exposed as they each attempt to make explicit their reasoning for what they are doing whilst out on placement through the actions they take and the impact their actions have on the artefacts and the object of activity. Having the students offer an articulation of their engagement in activity will help shed light on their developing consciousness and yet for transformation to occur specific conditions must prevail to provoke a change in the activity incorporating changes in consciousness for the participants.

3.3.3. Transformation as Expansive Learning Through Experimental Objects

Expansive learning is defined as a reconceptualisation of the object and motives of the activity system gifting a widening horizon of possibilities (Kerosuo, Kajamaa et al. 2010). Expansive learning is depicted as a fundamentally creative process where concrete experimentation with the object of an activity system can lead to transformation of the object and the activity (Engeström, Rantavuori et al. 2013, Sannino 2014). The object is an invitation to personal interpretation and sense-making that may provoke a journey through a 'zone of proximal development' - a place 'pregnant with possibility' where much is possible until one possibility is realised (for discussion of the origin and meaning of 'zone of proximal development' see Gillen 2000). The work placement, as a boundary phenomenon, represents a latent zone of proximal development.

Central to this idea of expansive learning is the concept of the contradiction considered the driving force for change (Bourke and McGee 2012, Mukute 2015). Eri (2013) discuss a typology of contradictions where, for example, contradictions exist within an element of an activity system (e.g. the division of labour), between elements of an activity system (the division of labour and the subject of the activity system), and amongst activity systems that share an object. It is the tensions in and between activities that impel change (Kerosuo, Kajamaa et al. 2010, Canary 2010). Contradictions are chronic (systemic - Engeström 2000, and Engeström and Sannino 2011) existing below the surface and usually undemanding of resolution, but, at a specific instant, can

become acute. The contradiction emerges, stubbornly resisting repudiation and forcing the need for resolution on the collective. A chronic contradiction is a 'need state', an 'objectless desire' (Engeström, Kajamaa et al. 2015), but in becoming acute meets (or demands) an object that opens up the potential to act in the course of critical encounters (Kerosuo, Kajamaa et al. 2010, Sannino 2014, Miettinen 2014). From this it follows that for Expansive Learning to occur the students need to articulate and confront the contradictions in their circumstances.

However, it is in the requirement to volitional action - the overcoming of obstacles, difficulties and contradictions (Engeström, Kajamaa et al. 2015, Goodnough 2016) - that expansive learning ensues. Only through the attempt to change does the individual establish connections in the activity and understand the situation fully – it is not enough to simply acknowledge a problem. A volitional action is a change action meant to transform the situation and create new meaning (Engeström 2007a) capturing the creative resistance of the individual generated through collective activity (Sannino 2010, Johansson 2014). The volitional action lies in the agentic layer where the agent creates '*intellectual, emotional and moral judgements*' as '*intentional transformative actions*' (Yamazumi 2014, p63).

Yet identifying the driving contradictions can be problematic and in clarifying the concept of a contradiction Engeström and Sannino (2011) postulate that the researcher is unable to directly observe such phenomena and can only

identify manifestations of them. They identified 4 types of manifestation distinguishable in the discourse of an activity.

1. Dilemmas,
2. Conflicts,
3. critical conflicts,
4. and double binds.

They are constructions or articulations of a contradiction – disturbances or deviations from the organisational script (Engeström 2000, Virkkunen and Ahonen 2011) - but not reducible to these situated subjective articulations. It is in the primary contradiction between use value and exchange value (Sannino and Ellis 2014) that all subsequent contradictions are generated (for a discussion on this complex of relationships see Tobach 1999). With the contradictions identified volitional actions can follow, a resolution focused via the reflexive lens of mediating artefacts (Engeström, Kajamaa et al. 2015, Sannino 2015). These artefacts impact on the zone of proximal development (ZPD) containing a generative power but also act to constrain the set of possibilities available to the agents (Engeström 2000). They contain a tension between the empirical and theoretical where the empirical can affect current practices and the theoretical allows the visioning of new practices (Engeström 2007a).

Although it is by no means guaranteed that a volitional action will take place, a ZPD successfully navigated, or a contradiction resolved, as contradictions become acute the possibility for change intensifies. As the social forces evident

within an AS become more finely balanced due to greater awareness, a moment around which leverage for change can be employed surfaces. Enabling the placement students to voice the contradictions in their own specific societal settings liberates this possibility for their transformational change (Sannino, Engeström et al. 2016b). Contradiction cannot be effectively settled by 'combining or balancing competing priorities', but must be resolved creatively by a new 'thirdness' requiring novelty (Engeström and Sannino 2011, p371, Kerosuo, Kajamaa et al. 2010).

3.3.4. The Change Laboratory's Role in Driving Expansive Learning

It is in the CL where expansive learning emerges as an interventionist exercise (for discussions on interventionist methodologies including CL see Virkkunen and Newnham 2013, p3, Sannino 2011a, Eri 2013). In the CL the researcher acts to help bring the contradictions into sharp relief and assist the subjects of the activity system negotiate a resolution to detected contradictions (Engeström, Virkkunen et al. 1996, Kerosuo, Kajamaa et al. 2010, Engeström 2014). The CL is a form of artificial activity aimed at provoking volitional actions, externalising the internal and drawing out how the different individuals internalise the societal making the intersubjectivity explicit (Sannino and Engeström 2017). The Change Laboratory is a design-based approach to research (for a discussion of design-based research see Penuel 2014) where a series of scripted interventions (although the script doesn't dictate direction, see Engeström, Rantavuori et al. 2013, and Kerosuo, Kajamaa et al. 2010) are used to question established wisdom and uncover contradictions in the target

activities. The participants agency is enabled in the CL through a defined series of expansive learning phases (Engeström, Kaatrakoski et al. 2012, Engeström, Rantavuori et al. 2013, Haapsaari, Engeström et al. 2016) - commencing with querying the object and looking for contradictions (Johansson 2014) leading to critical encounters (Engeström, Kajamaa et al. 2015), invoking volitional action (Sannino 2015) and, therefore, the potential for expansive learning.

Through the use of mediating artefacts the potential for resolution of contradiction is enabled by empowering the participants to enact solutions, and, therefore, generate a successful expansive learning cycle (Thorne 2015, Skipper, Musaeus et al. 2016). This process generates a dialectical dance allowing the subjects to ascend from the abstract to the concrete (Engeström, Sannino et al. 2014, Sannino, Engeström et al. 2016b, Sannino and Engeström 2017) and therefore generalise learning about the activity system(s) under scrutiny (Engeström, Rantavuori et al. 2013). The researcher, through artefacts produced by the CL, is able to glimpse moments of changing consciousness by unpacking the ZPD (Morselli, Costa et al. 2014). However, expansive learning is not guaranteed by the CL, especially in short expansive cycles (Engeström 1999b, Engeström, Rantavuori et al. 2013), but it may not be necessary to resolve contradictions to develop ontological movement for the participants (Johansson 2014).

With a research focus on student learning whilst on placement, and specifically looking to explore the tension between the workplace and the academic

elements of the placement, it is felt that a more intentional stance towards the methodology is required. The students are on an '*expansive and practical quest to grasp the object of their activity*' (Sannino 2014, p56) potentially moving from an individual conceptualisation of learning to something more social and collective. Within the CHAT theoretical framework the CL would appear to be an appropriate method, allowing the students and the researcher to explore academic outcomes – and empowering the students in their developmental choices. To explore student learning through the work placement we must consider the design of a CL such that it facilitates student agency in uncovering and resolving contradictions between their day-to-day activities in the workplace and the activities demanded of their second academic identity. This approach to research, of using a researcher actively engaged in the change process, envisions the researcher as an agitator raising awareness of a system's fetters in its current state and empowering the subjects of the activity system to become purposeful agents in their own change project (Silvonon 2004). Execution of this methodology provides the analytic basis - the outputs from the CL - to answer the research question and to uncover the mechanisms for the variations in outcome identified in the literature on work placements.

3.4. Further developing the reasoning for CHAT and CL

Although it has been demonstrated that the CHAT/CL theoretical and methodological approach provides a good basis for addressing the question and examining placement student learning, the approach is not unproblematic.

There are a number of critiques of CHAT/CL that come under the broad headings of Philosophical, Structural and Operational.

Philosophical critiques are aimed at the guiding philosophical principles that underpin CHAT and have been broached in the last chapter when examining the potential for the triangle obfuscations of the theoretical base (Bakhurst 2009) and its potential to ignore issues such as power even acting to reinforce capitalist relations (Avis 2007). Further criticisms have included those of philosophical purity and CHAT potentially turning its back on its Marxist roots (Avis 2009, Gillen 2000). That it is overly influenced by the ideology of the USSR and the ideological battles of a particular period in the USSR's development (Bakhurst 2009, Lektorsky 1999) is a part of this critique. These particular strands of thought will not be addressed here because it is felt that theory is not pure, and influences, both positive and negative, play an expected role in the theory development process – a significant focus for this thesis.

There are also criticisms that it is more constructivist in interpretation rather than basing its understandings in the materialism of its roots (Bakhurst 2009). The focus of many studies is often on socially constructed understandings (Vianna and Stetsenko 2006) rather than a more complete unpicking of material conditions of an activity system. The defence is often one of a complex materialism with a variation on the quote "Men make their own history, but they do not make it as they please" (Marx 1963). This can often feel inadequate in the face of the discussions around specific studies (Bligh

and Flood 2017). It has also been argued that the opposite may be true, that with a focus on activity, humans are not creative beings, just executors of plans (Lektorsky 1999), and that an object oriented view ignores human experience (Radzikhovskii 1991 cited in Häyrynen 1999). These philosophical areas, although important are not considered here, but the implications of some of them serve to uncover certain areas for investigation in this research.

Moving from questions of CHAT's philosophical roots we move towards issues regarding the structures of CHAT depicting a clear and coherent theory of human development in its own right (Bakhurst 2009). Do the various components of CHAT stand up to scrutiny? For example, the concept of local radicalism is usually focused on the reconceptualization of the object (Avis 2009) defined as an epistemological or ontological change covered by expansive learning (Engeström 2001) and the difference between the generation of expansive and non-expansive learning (Engeström, Rantavuori et al. 2013). The notion of local radicalism is itself perceived as an underdeveloped concept (Daniels, Cole et al. 2007, Daniels 2009). If different individuals can go through the same expansive learning cycle and some display expansive learning and others not (Haapsaari, Engeström et al. 2016), what explains this difference? Such individual reactions to a collective phenomenon such as expansive learning may manifest discursively through comments on how much they accept, or buy into, an expanded object of activity and the mediated activity system. If an individual appeared to reject this expansion in the language they use, even whilst others in the collective were behind the idea, then that individual would be displaying evidence of not

expansively learning even where evidence of collective learning was present. This question is important when examining variations in outcomes for placement students and the idea of differing magnitudes of influence regarding the impact of mediating artefacts on individuals proposed above. There appears to be few studies to see how sustained any change from a CL is and we are left wondering if this local radicalism discussed above can be sustained if it doesn't spread beyond the local context and, therefore, may only really relate to the subjects of the activity system rather than the object? This is an important set of questions lying at the heart of the CHAT/CL project of transformation. It may be argued that any further change is a natural part of the expansive learning cycle, of new contradictions identified and resolved, but without serious longitudinal studies it would be difficult to substantiate (Haapsaari, Engeström et al. 2016).

Furthermore, any discussion of CHAT's structures must address the various components explicit to the Activity System diagram. Even considering Engeström's (1987) warnings of the danger of this focus, there remain questions regarding the component parts of the activity system diagram. For example, the intersubjectivity and multiplicity of motivations that generate the transformational contradictions are focused on the object of the activity system (Bakhurst 2009). But where do motivations surrounding other aspects of the activity system, especially motivations focused on the subject, sit (Davydov 1999)? Relationships within the subject component can have a multitude of motivations just as with the object and may not be related to the activity system(s) under investigation. It may even be true that there are motivations

unrelated to the object surrounding mediating artefacts in the activity system generating contradiction through critical encounters. It has been argued there are artefact generating activity systems and subject generating activity systems (Virkkunen and Kuutti 2000), and notions of knotworking (Engeström 2000, Engeström, Kaatrakoski et al. 2012, Kaatrakoski and Lahikainen 2016) may better help unpick this, but this level of complexity is rarely seen in the published literature, and it may be that the focus on discrete cases (Avis 2009) may lead to obscuration.

From criticisms of an underdeveloped subject we could add all parts of the activity system. From this we can also see a weakness in the way the activity system approach under develops activity system interactions with its heavy focus on the shared object (Bakhurst 2009). We can see from this project that there are other potential areas for shared aspects of activity systems that could also generate contradiction. Beyond the activity system, we are seeing a growing discussion surrounding generative dialogues (Ellis 2010, Miettinen 2014), identity (Daniels and Warmington 2007, Daniels H., 2016, Kaatrakoski and Lahikainen 2016), the individual (Davydov 1999, Tolman 1999, Stetsenko and Arieviditch 2004), leadership (Yuen, Chen et al. 2016), the internalisation/externalisation mechanisms (Williams, Davies et al. 2007) and how technology fits in activity as a cognitive tool (Su, Feng et al. 2013) rather than a practical tool (Sung 2017). CHAT is clearly a theoretical perspective under continuous development, and therefore an interesting area for methodological investigation with many opportunities for contribution.

Operationally we can arguably perceive a blind activist approach developing where the CL and its technical requirements obscure the theoretical structures underlying the CL (Bakhurst 2009, Bligh and Flood 2017, Nussbaumer 2012). This naively operational position underlines the importance of the underpinning philosophy. The CL researcher can become too focused on the steps in achieving expansive learning rather than the underlying theoretical structures of expansive learning and a CL can collapse into a purely technical set of methods (Teras and Lasonen 2013). This leads us to question the role of the researcher as an agitator and even whether agitation and freeing the subjects of an activity system to experiment with the object is enough to enact transformative change in an activity system.

3.4.1. Ethics and the Insider

There are a variety of issues regarding ethics that have been explored to ensure a responsible outcome. This study complied with the ethical procedures demanded by Lancaster University and gained ethical clearance through a reflective process on the methodology. Key to this has been the fact that these students will be my own students taking an active course of studies and their supervisory experience will be different to other students on the same programme.

This study is a part of a wider project aimed at improving the supervisory experience of our placement students and so it may be expected that experimentation with different forms will take place. The difference in this case is narrow in that the form and amount of assessment is exactly the same for

all students. Due to this research one of the assessments has a difference in delivery for the purpose of exploring different ways of enabling student reflection on their placement experience central to the assessment. The reflective learning log is an important component in the placement students' assessment and historically been weakly guided – the students reflect on what they want to do with limited input from the academic supervisor. Different supervisors will provide different levels of input dependent upon how they perceive their role with respect to the student experience. For example they may specify the structure of each learning log entry. The study here proposes a more strongly guided format specifying what is reflected on in each of the learning log entries. It is felt that the wide scope of interaction between academic supervisor and student currently allowed means that this addition to the assessment was not necessarily disadvantaging students beyond any disadvantage incurred by the division of labour necessitated by the supervision of large numbers of placement students (around 120/year). Furthermore, it was made clear to the participants in the study that they could remove themselves from the study at any point if they felt it was not appropriate for them. In fact three declined to continue with participation once the form was explained to them.

There is also the issue of insider/outsider research where my position as researcher, assessor, and teacher is brought in to focus (Drake 2010).

Insiders are considered to be researchers who research their own organisation (Coghlan, Shani et al. 2013). The idea of the insider is often seen negatively (Brannick and Coghlan 2007) and needs to be considered carefully

as an approach to a specific problem and the aims and goals surrounding specific projects (Koponen 2004). I am the Director of Studies for some of the participants, I will have taught a few of them in their first two years at university, and all knew me as the Director of Placements. These various roles carry with them questions surrounding trust (Hanson, Humphrey et al. 2007). This isn't necessarily negative – it is as likely that the students who have worked closely with me will have built a trust in my capabilities as distrust and for a number of the participants I was a potentially unknown quantity. There may have been perceptions that involvement in the research was a requirement of my supervision (Humphrey 2013), but the informed consent mentioned above demonstrates that this was not the case.

In CHAT the researcher is often seen as an active interventionist in the process (Miettinen 2004, Sutter 2011), an agitator attempting to uncover contradictions in context and promote expansive learning. In other words the methodology discussed here is built around the concept of insider/outsider and that research benefits from the shared experience (Coghlan, Shani et al. 2013). That is not to negate the issues concerned with insider/outsider research such as the configuration of power relations (Kontinen 2004, Silvonen 2004), but to recognise that where there are problems also lurk possibilities (Miettinen 2004). Participants in research are affected by many different influences where the objective ideal of research distance is a conceit limiting reflection on the role of the researcher (Coghlan, Shani et al. 2013, for an extended discussion of the role of the researcher in CHAT see Hakkarainen 2004).

Inherent in the Change Laboratory technique is the exposure of contradictions within activity systems. In the programme of research detailed here we have attempted to expose the students to the contradictions of their position whilst on work placement. This process is intended to promote expansive learning, something depicted as transformational. Many transformational learning experiences are more than just cognitive phenomena, and often include an affective dimension (Fajardo and Torres-Guzmán 2016). It is not simply that an individual's emotions are engaged in the process of transformation, but that they are exposed to potential vulnerability as their own identity/behaviour is scrutinised in a collective environment (Virkkunen and Newnham 2013, p22). The role of informed consent should not be underplayed where it has provided an opportunity for participants to withdraw from the study at any point if they felt uncomfortable or that the approach did not suit their own conceptions of performance in the assessment.

3.5. Conclusion

This chapter proposes that for good quality research it is necessary for the researcher to expose their considerations for scrutiny by the wider research community. I have detailed here thinking that links CHAT/CL to the phenomena that is the work placement in HE. Moving from my own anecdotal experiences on leading the development of such a programme and having supervised dozens of placement students, I connected the binds that students often face to components of CHAT/CL. I have explored how consciousness

develops and shapes practice through internalisation/externalisation and how transformational change can take place due to the inherent pressures of contradiction in an activity system. I have discussed that it is not enough to identify contradiction, but that in seeking to change an activity system through volitional action the subjects come to more fully understand their situation. That transformational change is a movement through a zone of proximal development but should not be perceived as individual practice, but as collective endeavour (Bagarukayo, Ssentamu et al. 2016, Collins, McCrory et al. 2015).

Some questions of philosophy may not necessarily be addressed in this research - for example, the historical development of AT and the influence of the USSR – but they should not be ignored. However, does that mean that CHAT is meaningless? Can we not examine CHAT in its own terms as a developing theoretical offshoot of Marxism just as Marxism was an offshoot of Hegelian philosophy? The important question is ‘does it provide a useful framework for analysis and investigation?’. There is a real tension between its constructivist leanings and its materialist roots, but isn’t that a reflection of the complex materialism it preaches? It may not be radical in Marxist revolutionary terms, but if it leads to epistemological and ontological transformation, is that not enough? To study expansive learning requires cooperation with the participants (Johansson 2014) and decisions for a CL should be made locally, within the expansive cycles themselves, under conditions of uncertainty and intensive search (Engeström 1999a).

The structural and operational weaknesses identified reflect the developing nature of CHAT/CL and should be seen as a potential basis for developing a research focus as this project does. Theory testing and theory development is an important tradition in research (Bligh and Flood 2017). It is in this tradition that this project sits seeking to add some small contribution to understanding the role of CHAT/CL in individual transformational change and in variations in outcomes. What is required is a strong theoretical understanding alongside methodological reflexivity (Daniels 2004). Arguably, the purity of theory allows us to avoid the dirty hands produced when grabbling with a messy reality and should not be considered more important than appreciating the concrete over the abstract (Toulmin 1999).

Chapter 4. Operationalising the Change Laboratory Methodology to Explore Student Work Placements.

4.1. Towards An Online Change Laboratory

Now the theoretical basis for the proposed project has been presented the operational aspects of the project will be clarified through exploring the various levels of planning in a CL (Virkkunen and Newnham 2013, p61). This will explain the requirements behind the methods including the reasoning for using the exploratory online formulation for the CL due to the geographical distribution of the participant population. This will be followed by components of an online CL to realise the Expansive Learning Cycle. The data collected and the approach to data analysis will be explained with a section on Critical Hermeneutics and its role in my analysis.

The proposed CL took place from January to May 2017 and comprised of weekly actions outlined in a series of 'activity sheets'. These activity sheets were posted on an online social project communication tool where the students' responses were also posted. This section will look at the reasoning behind the proposed exploratory online CL looking at the aims, practical considerations and the differences between an online version and a traditional version of the CL and the possible issues raised.

4.2. The Importance of the Supplementary Research Questions in Shaping the CL

The supplemental research questions provide a focus that leads us back to the central RQ and shape the methods deployed as a part of the CL.

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Work Placements.

- Q1. To what extent do the concepts of CHAT/AS explain the students' practice settings and transformations in practice?
- Q2. What are the barriers to students conceiving management theory as concretely relevant to their local practice settings?
- Q3. To what extent can changes in participants' orientation to theory be discerned as attributable to the participants' work within the research-intervention?

So 'How can a Change Laboratory research-intervention support a group of placement students to take abstract concepts of management theory and embed them concretely into their work practices?' requires that we explore the utility of CHAT/AS in explaining the students' situation, that barriers to linking theory and practice are brought to the surface enabling the possibility of students to seek a resolution. If resolutions are found and transformation facilitated, then it is necessary to examine the role that the CL played in this process.

In coproducing mediated artefacts through a CL clues to the answers for the research questions can be established. The interactions in multiple AS can be determined, manifestations of contradictions in the discourse identified, critical encounters uncovered and volitional acts revealed. It is the analysis of the artefacts of the CL that provide a means of exposing student transformations and provides a window into the conflicts between the different activity systems, how they affect the students and how the CL affects the

transformative process. The selection of research instruments therefore illuminates the participant's transformation.

4.3. Intervention Aims

The position of the placement student within an organisation and within an educational institution, integrated with the needs of the research question, provides us with considerations for the requirements of the research methods and instruments. Although employees in an organisation, students are still on a programme of study with its attendant assessment requirements and for the target institution this is focused on learning during the placement. If we are to minimise the impact of the research on the students and still collect valuable data we propose two layers of aims for the CL intervention. One layer concerned with the students and their personal development and aligned with the assessment. Their assessment is to provide a learning log of critical reflections on their experience of theory and practice. A second layer concerned with the wider context and links back to the research questions.

The aims for the CL facilitating the student's development are:

- To critically reflect on theory through practice.
- To develop a more critical understanding of theory.

The second layer of aims for the CL concentrate on the research questions and comprises:

- Provide a structure that incorporates the expansive learning phases.
- Provide opportunities to create awareness of activity contradictions through the use of double stimulation.

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- Provide a space for collaborative interaction.
- Capture empirical evidence of the manifestations of the contradictions
- Capture empirical evidence of growing awareness of the participants of these contradictions
- Capture empirical evidence of expansive/non-expansive learning.

These two sets of aims do not exclude one another and, through considered development, the two sides were aligned. The students' assessment took the form of a developmental intervention involving a series of scaffolding activities (Yamagata-Lynch, Click et al. 2013 use CHAT rather than CL as a framework for this scaffolding) aimed at enabling student evaluation of the theory/practice dichotomy. Coupling this with key elements of the CL methodology the structures of the assessment make use of the principles of CL to provide the necessary scaffolding in the students examination of theory/practice (Roth and Lee 2007). Provision of an artefact that can be assessed also provides a channel for the voice of the students and an outcome for the CL that can be analysed for the purposes of the research.

4.4. The Participant Sample

15 students were invited to take part in this research and were chosen to be representative of the cohort taking a year in industry in the year of study. They are studying a number of different management related degrees, they are a mix of genders, race, entry qualifications and come from both UK/EU and internationally. The demographic split was determined by the data on students

made available by the target institution. Each had obtained a paid placement at an organisation somewhere in the UK; only two of them were co-located the rest working in different industrial sectors and companies to each other.

Table 4.1 Participant Demographics

Gender	Nationality	Residence	Age	Disability	Entry Quals	Ethnicity
F	British	Home	Young (<21)	No Known Disability	BBB	White
M	British	Home	Mature (21+)	No Known Disability	AAB+	White
F	British	Home	Young (<21)	No Known Disability	AAB+	White
M	British	Home	Young (<21)	No Known Disability	AAB+	White
M	British	Home	Young (<21)	No Known Disability	AAB+	White
M	British	Home	Young (<21)	No Known Disability	OTHER NQ	White
F	British	Home	Young (<21)	No Known Disability	AAB+	White
F	British	Home	Young (<21)	No Known Disability	OTHER NQ	White
M	PHILIPPINES	Home	Young (<21)	Known Disability	AAB+	Other Asian Background
F	British	Home	Young (<21)	No Known Disability	BBB	White
M	British	Home	Young (<21)	No Known	OTHER NQ	Black or Black British

				Disability		African
M	British	Home	Young (<21)	No Known Disability	AAB+	White
F	British	Home	Young (<21)	No Known Disability	AAB+	White
F	British	Home	Young (<21)	No Known Disability	AAB+	White
M	UGANDA	Overseas	Young (<21)	No Known Disability	OTHER	Not known

4.5. Knotworking: Thinking about the Students' Activity Systems

An early exploration of the complex of interactions in the students' activity systems enables us to better develop the CL for this intervention. It provides a conceptual landscape around which aspects of the intervention can be scripted to help address the RQ.

On the academic side the students are the objects of two activity systems - more accurately their academic development is the object of their own academic activity system and the object of the academics' activity system. There is the potential for tensions between motives of the student and the academic about the shared object of these two activity systems. This could be seen as a classic formulation of interacting AS where two AS share an object and it is this shared object and the differences of motivations that generate sets of contradictions (figure 4.1). However, the joint nature of the subject and object provides an interesting twist on the traditional formulation and in turn

provides a useful focus on the subject offering an opportunity to further develop the AS conceptual structure. The subject of an AS can be an individual or a group and to understand the typical academic activity system of the placement students is to see a collection of individuals as opposed to a group (Virkkunen 2006), a deviation from the usual AS perspective.

A further twist to the traditional formulation reveals a shared subject, a reflection of the shared object construct (see figure 4.2). The subject of the students' academic AS – the student - is shared with another AS, that of the workplace role in which the student is employed, a manifestation of boundary practices (Waitoller and Kozleski 2013). The workplace AS informs further tensions between those of the students and those of the employer's towards the workplace object of activity. However, as motivations towards the AS object are the preserve of the subjects of the AS, so the shared nature of the subject in two of the AS featured in this study has the potential to generate further contradictions.

We now have a number of places where contradictions can arise (Yamagata-Lynch and Haudenschild 2009) and make themselves felt (figure 4.2); the motives of the students towards their academic and workplace activities (different objects, shared subject), the motivations of the students and academic towards their academic activity (shared object), and the motives of the students and other employees of the organisation towards their workplace activities (shared object). On top of this set of intricate AS interactions there is an activity that exists in both a collective and individual form (the students'

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academic activity). The complexity revealed by the AS is a reflection of the boundary-crossing position of the students (Engeström, Engeström et al. 1995, Engeström 2007a, Ellis 2008, Akkerman, Bakker et al. 2012) and the transitional nature of their placement role (Teras 2012), furthermore, it's a manifestation of the knotworking concept (Engeström 2000, Daniels and Warmington 2007, Engeström and Sannino 2010, Engeström, Kaatrakoski et al. 2012) and an example of a hybrid activity system (Yamazumi 2008). The individual lived experience in this instance may be considered either a more specific or a more universal manifestation of generic life (Davydov 1999, Virkkunen 2006), where the ideal of collective activity may be represented in an individual. Their subjectivity (as reflected in their assessments) expose the collective activity and the social relations encapsulated by the activity (Williams, Davies et al. 2007, Williams, Davis et al. 2007, Johansson 2014).

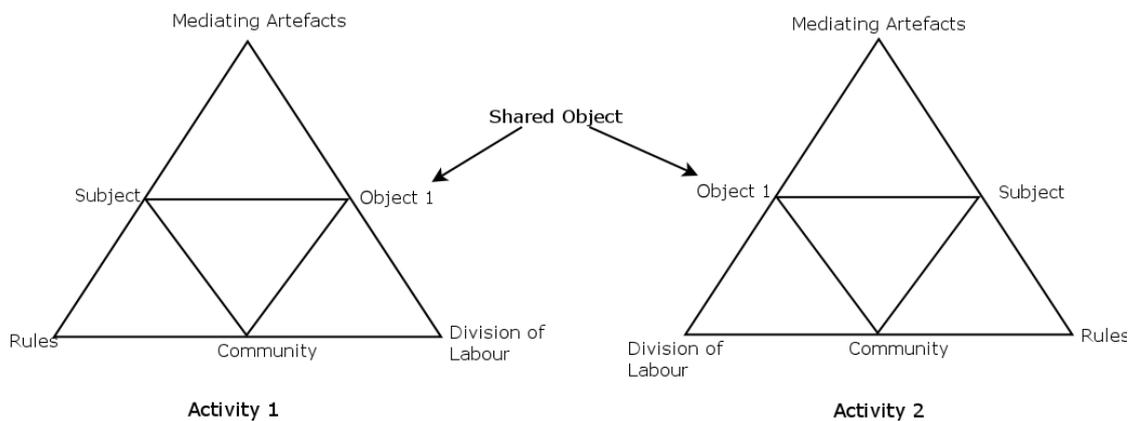


Figure 4.1: Classic Activity System interaction around a shared object

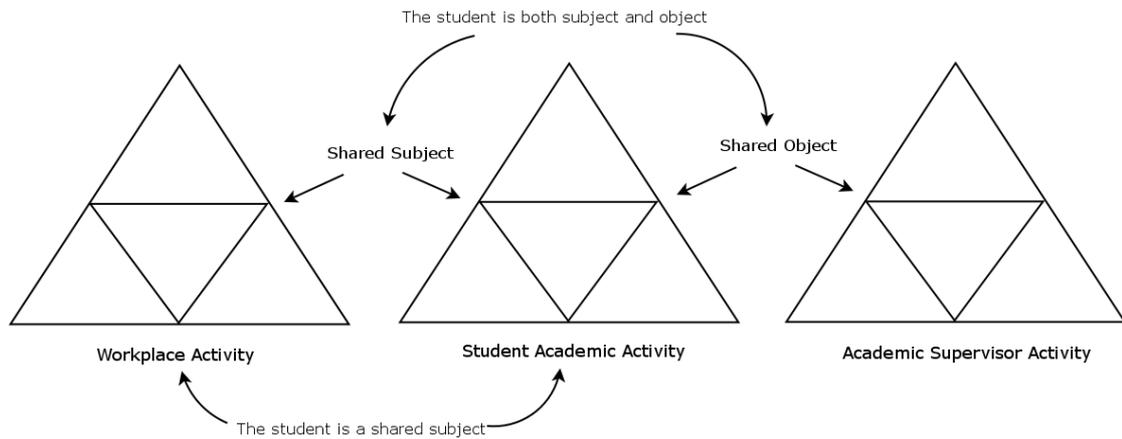


Figure 4.2: The students' Activity System interactions

4.6. The Process of a CL

The Change Laboratory encapsulates a series of phases, or Expansive Learning Actions (Virkkunen and Newnham 2013, p17, p75, Engeström, Rantavuori et al. 2013). In each intervention, as the study moves through these phases, the researcher seeks to trigger awareness of contradiction and continue to raise the potential for expansive learning (Morselli, Costa et al. 2014). For the contradictions to be uncovered the role of the mediating artefact takes front and centre stage (Virkkunen and Newnham 2013, p19, p39). Different subjects can approach a particular object of activity with their own motives. It is this conflict of motives that can trigger the possibility for change and can be seen as an initial stimulation – a critical encounter. It is in these critical encounters (Engeström, Kajamaa et al. 2015) that the possibility for transformative learning comes to a head, and a second mediating artefact can then be used to provoke an expansive learning experience - a process of double stimulation (Virkkunen and Newnham 2013, p47, Engeström, Sannino et al. 2014, Sannino 2015, Thorne 2015) that enables a radical reframing of an object through a collective experience – generating a ZPD. The double

stimulation usually takes place through a task as a primary stimulation (problem specification), and utilises mirror materials - artefacts placed around the intervention space – exemplifying the nature of the problem (Virkkunen and Newnham 2013, p19). The second stimulation is provided through tools and frameworks to help the participants address the problem (Virkkunen and Ahonen 2011). The primary stimulation and mirror materials are there to reflect critical areas in the current activity (Saninno 2008) and draw out peoples current understanding of system interaction with the double stimulation as a means to put the ‘cognitive cat amongst the pigeons’, to disturb current conceptions and allow a moment for change to arise (Sannino and Engeström 2017).

4.7. The CL Requirements

From these considerations we can now define a set of requirements that the CL should meet.

- It provides an opportunity to:
 - meet assessment requirements for critical reflection about theory and practice and
 - produce artefacts that act as an analytic base for the research.
- It encapsulates the expansive learning phases.
- It provides a basis for the double stimulation central to the CL.
- It provides artefacts to act as mirror materials and for double stimulation.
- It explores:
 - The students’ individual circumstances.

- The students' understanding of management theory.
- The contradictions they face.
- The analysis identifies:
 - CHAT theoretical concepts,
 - AS system components,
 - Contradictions,
 - Student sense-making
 - Transformations through critical encounters and volitional actions.
 - The role of the CL in any transformations identified
- Takes into consideration the students individual circumstances including their geographical spread.

4.8. Practical Considerations Shaping an Online Change Laboratory.

The typical CL described in the literature takes place over a number of sessions separated over a period of weeks with a session lasting for at least two hours if not longer (Teras 2012, Virkkunen and Newnham 2013, p15, Eri 2013, Montoro 2016). The CL requires a space for the CL to take place in that the participants can move in and out of (Mukute 2015, Kerosuo, Kajamaa et al. 2010). The student participants were scattered across the UK and so the ability to bring them together in one place over several occasions was a significant practical obstacle. Employers tend not to see the need for their employees to be away from work on a number of occasions for an extended period for reasons not directly connected to their work (Ryberg, Koottatep et

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al. 2006) Even the students may feel that this is an unnecessary claim on their time, especially if they have to take personal leave to attend the CL sessions.

The exploratory use of modern online social tools provides an opportunity to enable a CL in such a geographically fragmented situation. The students posted their responses to the CL sessions through the online tool, I posted my responses to their responses, and they in turn posted responses to my responses and so on (Virkkunen and Newnham 2013, p113). Everyone's posts are visible to the collective to promote peer learning (Lupu 2009) but also bringing a horizontal movement in their learning (Ryberg and Christiansen 2008) Such a response cycle encourages reflection and creates a space for creative or generative dialogues (Glover and Miller 2009, Gutiérrez and Vossoughi 2010, Johansson 2014, Heeneman and de Grave 2017). It also provides a space that the students can move in and out of as the demands on their time allow providing an 'orchestration of togetherness' (Ryberg, Davidsen et al. 2017)

This move to an online environment carries some challenges for the CL design. In the first place, there is a lack of discrete sessions. The traditional CL takes place in a set space with all participants at the same time over a number of occasions. Here we move from a synchronous environment to an asynchronous environment where the participants' experience of the CL can be very different. Some performed their CL sessions whilst at work, some whilst at home. Some completed the various CL actions in an episodic manner (similar to the traditional CL), but some completed them in extended sessions

(e.g. over a weekend). The lack of a discrete session also raises issues about the role of the double stimulation. The lack of an episodic CL means that online CL sessions sometimes blur the difference between primary stimulation, mirror materials and secondary stimulation of the CL.

4.9. Constructing an Online CL.

4.9.1. Slack: an online platform enabling the Online CL.

Slack is an online tool advertised as a team-working platform to better manage communications and workflow for a project and was used as the CL space to organise CL tasks and discussion. Other social platforms such as Facebook were considered and although they could be used in a similar role (e.g. through the use of Facebook groups) it was felt the possibility of accidental exposure of participants and their input to the project was such that they should be discounted. Slack necessitates that the participants be invited to the platform to join specific workspaces by the manager of that workspace and each participant has to be actively approved once they reply to a workspace request. This process ensured greater levels of privacy, as an individual couldn't join without explicit approval from the workspace manager – in this case the researcher.

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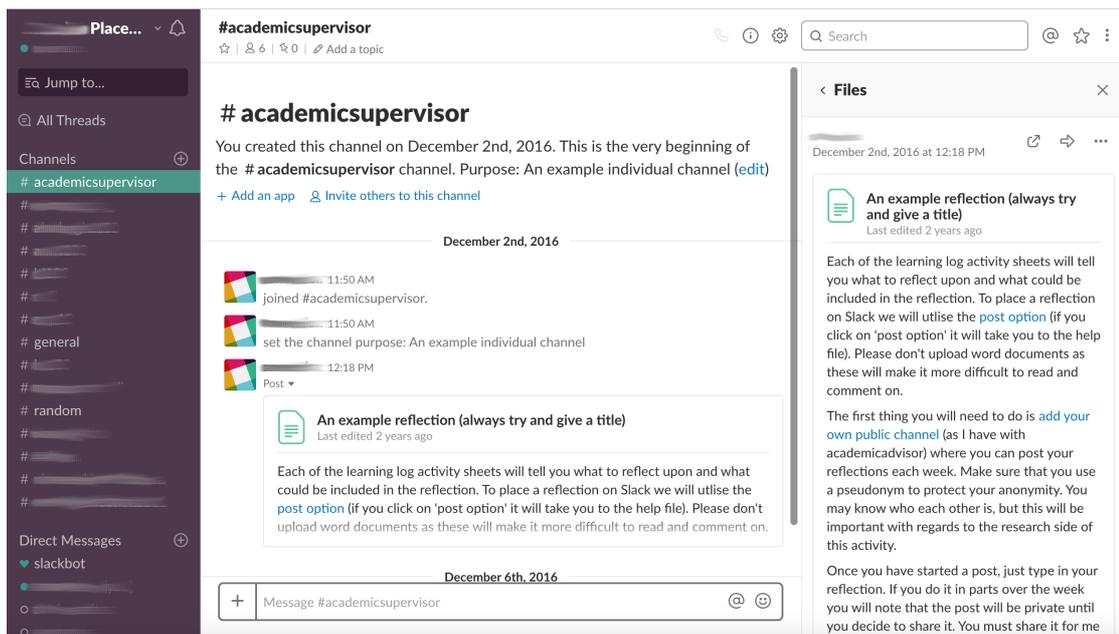


Figure 4.3: The example channel providing a template for participants postings.

The workspace is split into a series of Channels, each intended to cover a specific area of work for the team where discussion and the posting of documentation relevant to the channel's area of responsibility are performed. These channels provide for an additional layer of privacy due to the necessity that participants have to be invited to join each channel by the creator of the channel. For the project there was a channel that provided guidance on using the workspace (see figure 4.3) and a channel for the publication of the various activity sheets (the documents that outlined the various individual tasks that comprised the CL - see figure 4.4). Each of the participants then created their own channel and invited the other members of the workspace to join this individual channel. In this individual channel the participant posted their learning log entries and other members were able to engage in discussion with them about their learning log entries (see figure 4.5).

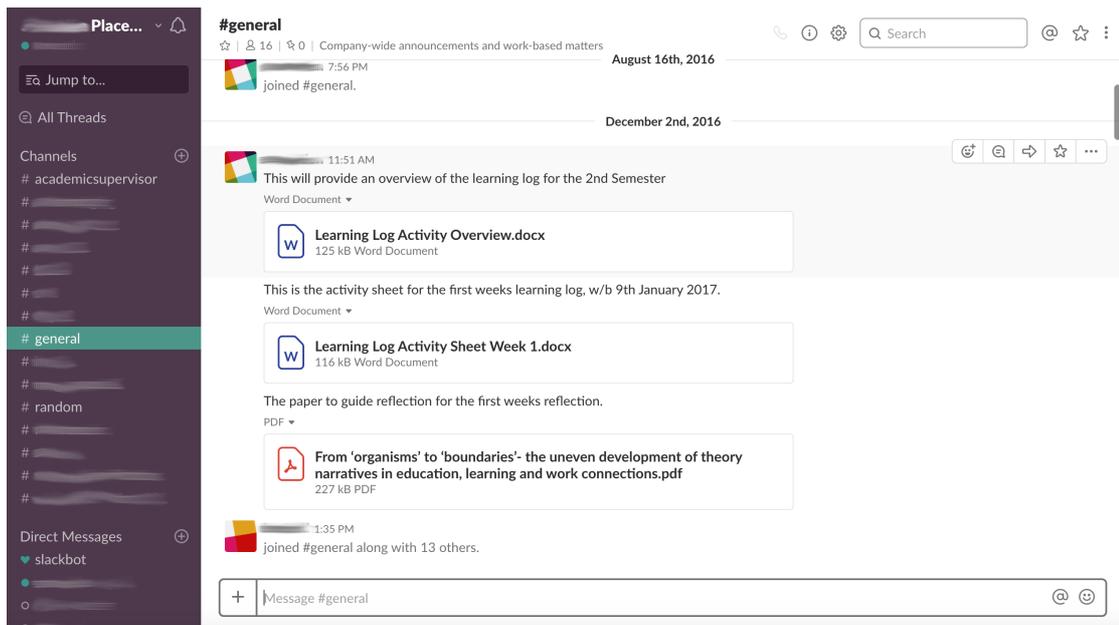


Figure 4.4: The channel where CL activity sheets for tasks were posted.

Engagement with Slack, and therefore the CL, can be done from a variety of platforms. There are versions of slack that can be used from within iOS and Android (covering mobile phones and tablet hardware forms) but also it could be used via a web browser from any computing platform that has a connection to the Internet. Furthermore there were a number of tools and techniques that would enable the posting of learning logs from offline creation of a word file and uploading it later or directly creating a post via the web interface. It was intended that such a wide range of connectivity possibilities would better enable engagement with the CL and ease the process of engagement. A participant could write their initial post in Word on a laptop computer, for example, and then upload it to Slack. Subsequently they could reply to any discussion generated from their mobile phone. This flexibility allowed each participant to control how he or she interacted with the CL managing their own level of engagement to suit their individual work practices over time. The CL space was always open providing a very accommodating environment for involvement.

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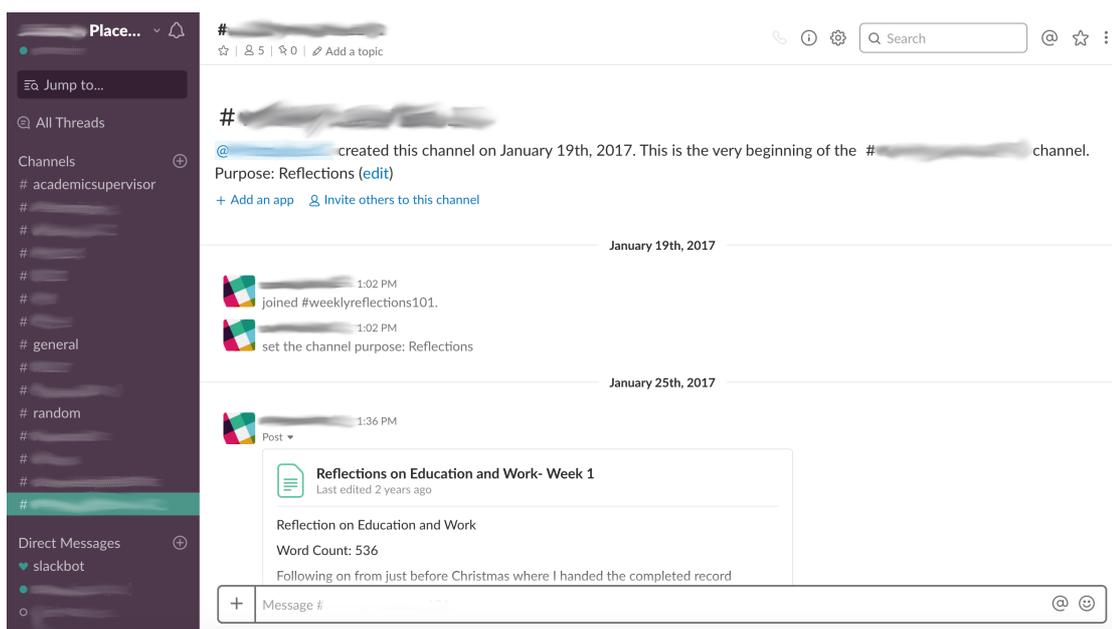


Figure 4.5: A participants channel showing a post for one of the learning log entries.

4.9.2. Data Collection.

The students completed a reflective learning log for the year (split in to two distinct phases) requiring them to examine theory through their experience in the workplace. The second phase of this learning log was used as the primary source of data collection through the reflections and discussions posted online. The content for each of the week's logs was determined through the guidance of the researcher by the use of 'activity sheets' based upon the Expansive Learning Cycle of the CL methodology (Mukute 2015). Each week an activity sheet was presented to the students outlining what they should reflect on, any guidance on the reflection and any artefacts they should use to help with reflection (for a discussion of the role of reflection in the CL see Virkkunen and Ahonen 2011). As a part of the negotiation process of the CL (Virkkunen and Newnham 2013, p69) there was a discussion with the students concerning the CL plan and at this stage three of them decided not to

continue as participants in the research. An example for the first intervention can be found in Appendix 1. Outputs from these activity sheets (images, activity system diagrams) alongside the reflections provided further data for analysis being representative of the student's current state of thought at a clear moment in time. Table 4.2 outlines the interventions for the online CL showing how the expansive phases were spread over the weeks, the forms of mirror material utilised and the first and second stimuli. Notice that not all phases have both a primary and secondary stimuli but that the whole process has double stimulation spread throughout (Virkkunen and Newnham 2013, p80).

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Table 4.2 The Change Laboratory's Expansive Learning Actions

Task	Expansive Learning Action	primary-stimuli	Mirror-data	Second-stimuli
1	Questioning Analysis: historical-genetic Looking at the learning	Reflect on what they think is the purpose of the academic work they are doing at whilst on placement as a part of their education.	Saunders on narratives on the role of education (Saunders 2006). Wenger on communities of practice (Wenger 2000).	Provide bullet points of concepts (a framework) for reflection.
2	journey the students have taken to this point of employment.	Reflect on where they have learnt especially the quantity/quality of the learning.	Clips from BBC radio show of student nurses discussing their	
3		Reflect on whom they have learnt from.	placements(BOB 2015).	
4	Questioning and	Reflect on the impact of	Post photos of themselves	

	Modelling	being a boundary crosser.	working and doing their academic work.	
5	Analysis: actual-empirical Looking at their current situation as 'boundary	Reflect on attitudes about the academic work they must complete.	Excerpts from and Wenge on communities of practice.	Discussions with managers and colleagues about their academic task to examine theory and practice
6	crossers'. Create an AS of their current situation and look at the contradictions	Create a model of their AS and reflect on the barriers to their academic and professional development.	They post images of a model of how they see what they are doing.	Activity Systems diagrams as a tool to model what they have been discussing (Engeström 2001). A template for making and AS. Provide definitions of

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				CHAT contradictions (Engeström and Sannino 2011).
7	<p>Questioning, Examination and Modelling</p> <p>Analysis: actual- empirical</p> <p>Examine the relationship between theory and practice. What is the relationship between theory and practice?</p>	<p>Reflect on the relationship between theory and practice</p>	<p>Discussions on the relationship between theory and practice with manager/colleagues</p>	<p>Article's on music theory</p> <p>Music score for "Something" By George Harrison</p> <p>Two different performances of "Something"</p>

8	Modelling and Implementation Rules for to guide the use of theory in practice.	Propose and reflect on rules for using theory in practice		Kolb's paper on the Learning Cycle (Kolb and Kolb 2005).
9	Implementation and Examination. Turning to the essay	Reflect on the theories they are thinking of using as the basis for their essay	Listing of theories from their 1 st year of study	
10	part of their assessment look at past teaching to examine through their	Reflect on proposed essay title and their exact choice of essay theme.	Post past essay titles	
11	practice and decide on a theme for their essay.	Reflect on choices of academic papers to use as an exploration of	The academic papers chosen for their reflections.	

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		theory/practice		
12	Process reflection	Reflect on the learning log process whilst they have been on placement.	The previous learning logs.	
13 – End of assessment period.	Implementation and Consolidation	Reflect on theory/practice for their essay	The theme and papers for the essay.	Observations of their own practice.

4.9.3. Data Analysis

4.9.3.1. *Identifying Themes of Contradiction*

The aim of the analysis was to assess the extent to which the CL supported the students' transformational process with regard to their understanding of theory/practice (Bagarukayo, Ssentamu et al. 2016). This was through a process of identifying CHAT concepts and AS components to providing an understanding of the students' practice settings, and identifying examples of expansive learning and the drivers for this expansive learning, primarily manifestations of contradiction (Sannino, Engeström et al. 2016b). This involved thematic analysis, for example, looking for discursive manifestations of contradictions, followed by a Critical Hermeneutic (CH) analysis from these thematic entry points. The purpose is to examine the texts produced in the process of the CL for hidden meaning. The role of the analyst plays an important role in CH and, as with CHAT, central to the development of meaning. Acceptance of the transformative role of the researcher is an important part of the overall methodology (this can be partially seen in Engeström 1999b).

The initial phase of analysis was based upon an in-depth examination of the texts produced by the CL and the intervention outcomes. There were 6 steps to this first phase:

1. Identify the components of the activity system(s) the students describe from both online discussion and posted documentation.
2. Identify contradiction types from the participant online discussion and the linguistic signifiers of the contradictions.
3. Identify expansive learning actions through participant online discussion, and the posted outcome documentation.
 - a. Identify critical encounters and characterise them.
 - b. Identify volitional acts and characterise them.
4. Identify non-expansive learning actions (paralysis).
5. Identify deviations from the script to find where the students are taking control of the expansive learning experience
6. Develop a set of models/diagrams that emphasise the expansive learning actions, the contradictions that drive these, and the artefacts that mediated the action.

This process will then be framed through a 2nd phase of analysis using a Critical Hermeneutic framework.

4.9.3.2. Critical Hermeneutics

To shape human action requires an ability to interpret intention through the texts produced by human activity reflecting the authors' intention. Critical Hermeneutics as proposed by Gadamer (1975) focuses a fundamentally reflective methodology on the interpretation of 'texts' through the consideration and fusion of 'horizons'. The text to be considered in hermeneutics can be any form of documents but has also been defined to include many other forms of

communication beyond the textual (Balfour and Mesaros 1994, Trede, Higgs et al. 2009). By horizons, Gadamer (1975) means the horizons of the text and the horizons of the analyst. The horizons of the analyst include their prejudices - both the productive and unproductive - that shape their understanding of the text, and the horizons of the text are the underlying assumptions - both explicit and tacit. Through a fusion of these horizons driven by the analysts process of reflection, hidden meaning within the document that serves social, economic and political power is meant to be uncovered (Prasad and Mir 2002).

To understand a text is to appreciate the hermeneutic circle of the text - of the relationship between the construction of the text and the originator(s), the interpretation of the whole text and the recipient, and the recipient and the originator. The hermeneutic circle is a realisation of manifest tensions between the intended activity by the originator(s) of the text and the inevitable activities mediated through interpretation by the recipient(s) of the text. There is a natural friction that arises due to the necessity of understanding the text as a whole through interpreting the various parts (and the sequence of those parts) - but that the parts and their sequence have, in turn, been determined by a purpose for the text as a whole. In other words the author(s) of the text have an intention, and can only communicate that intention through a specific sequence of parts that comprise the complete text. When that text is subsequently interpreted through its parts, the sampling and remixing that the text goes through affect the recipients understanding of the intention of the text as a whole.

This is to reject authorial intent as reflected in the current sequencing of the text. Rejection of authorial intent can be interpreted in an aggressive sense, especially when dealing with texts relating to those in a position of power, but here it is meant in a more sympathetic sense recognising that in working towards a specific goal and expressing that through a text, more than the goal is revealed. The hermeneutic circle is therefore an acceptance of the tension that lies between the intended activity of the author(s) and the activities that arise through mediated interpretation of the text. The meaning of a text therefore emerges through a dialogue between the analyst of the text and the text itself. However, understanding is not one-sided, and there is a necessary duality of understanding of both the text and self, and whilst many hermeneutic studies focus on the text, there are those that emphasise the self (Zeiler 2009).

Building on the field of hermeneutics and a reflective approach to social conditions within which a text is embedded and reinforces power differentials, Phillips and Brown (1993) propose an approach to CH focused on five characteristics of a text. These 5 characteristics could be described of aspects of meaning within a text that act as channels through which a message is conveyed.

- The Intentional Characteristic - A text is produced by someone for someone, for a reason, it contains a message to be communicated.
- The Referential Characteristic - This characteristic allows the formal examination of the relationship between the text and the referent, and

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how symbolic forms can impact the understanding of the recipients about the referents. This is fundamentally the relationships or power and culture.

- The Contextual Characteristic - Who created it, how it was created, and how it was transmitted are important aspects of the contextual and provide a social and historical perspective to understanding the text.
- The Conventional Characteristic - The rules for the text and the conventions by which it is encoded and decoded both act as an inclusive/exclusive dichotomy drawing boundaries around participants in a dialogue.
- The Structural Characteristic - The relationship between the various elements that comprise a text. The articulation of this structure says something more about the text than simply examining the elements themselves.

By spiralling out from the identified contradictions from the previous stage in the analytic process we can begin to develop a better understanding of how those contradictions arise, and how they are resolved - identifying points of expansive learning. This analysis will take place through the initial thematic analysis that will then be classified according to five characteristics of a text allowing for multiple readings and thorough organisation of the texts (Teras and Lasonen 2013). This analytic approach covered looking at the frequency of response, start dates of doing the activity sheets, as well as the response content. The way they respond is telling, of how they interpret a question and the language they use, the metaphors they use and even the typos and mistakes they make. Interpretation of the text will then take place at the

crossing of three moments of a text (Phillips and Brown 1993). The 3 moments consist of a socio-historical analysis encompassing the first 3 characteristics of texts (from where has it arisen), a formal analysis consisting of the last 2 characteristics of texts (what are the abstract signs utilised for communication), and a moment of interpretation-reinterpretation that combines the socio-historical and formal moments of analysis (what is the role in the social system).

A part of the hermeneutic process is to open up the horizon of the analyst - the researcher. For me the role of the placement is to help students better understand the materialisation of theory in the realms of practice. Theory is not the real world, but a distillation of the real world. It embodies a specific set of assumptions, variables, entities, actors and their relationships. The specifics of any particular set of circumstances will affect the appearance of these theoretical constructs through experience. For students to realise this disconnect, and that theory isn't merely a set of mnemonics to be regurgitated in an exam is an important learning experience. In appreciating this tension between theory and practice they are better positioned to use theory to intervene in their practices, both to determine a form of intervention, and then shape that intervention. The level of understanding reflects the state of the consciousness of the individual student. To understand and intervene in this process better is to understand the process of changing consciousness in the social context the students discover themselves in.

4.10. Conclusion

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Moving from the methodological reflections to those of method this chapter has shown how I have developed the online CL from a more traditional face-to-face CL and the issues I had to consider regarding bringing together my participants, and the development of a Cycle of Expansive learning generating iterations of double stimulation. My approach to the data generated by the CL further demonstrates my intentional stance towards the text coproduced through interactions between the students and myself allowing the construction of meaning as an output of an interventionist research design.

Chapter 5. Findings

This chapter will examine the findings from the Critical Hermeneutic analysis of the data obtained by the students work on the Change Laboratory (CL).

Using the 12 reflective learning logs produced by the participants the chapter will focus on the first two moments of analysis, the formal and the socio-historical. It will draw out key themes that have been identified at this stage in the analysis and present this alongside excerpts from the students' learning logs. The excerpts chosen will reflect general themes identified in the text as a whole will be presented as 'thick descriptions' to support the findings.

The chapter will note the manner in which the students interacted with the CL and the intentions and conventions that shaped this research intervention.

That the output from the research intervention – the learning log – is also a piece of individual assessment is important in shaping the discussion therein.

The developing context will then be examined looking at key differences between education and the workplace from the students' perspective. Finally the meaning that the students ascribe to the different components of an AS will be uncovered as a way to gain insight into their practices. This development of the findings will be ascribed a simple interpretation that will be developed further in the discussions chapter through the lens of Cultural Historical Activity Theory.

5.1. Student Assessment as a Mediated Text

5.1.1. The form and shaping of the discussion

To better understand the directions of the learning logs is to appreciate the way the text is formed as a response to specific demands on the way the students write. Key parts of this discussion are the academic conventions surrounding the production of this particular form, the reflective learning log. There are two aspects to this, the expectations of the individual learning log and the academic forms that surround the piece of work.

The online discussion that makes up the learning log forms a part of their assessment for the academic portion of their placement experience. This requires academic referencing as a part of the written form. As part of the schools conventions the Harvard style of referencing is utilized requiring that the students provide an author date composition for the inline part of the reference and then a separate reference list at the end of a piece that details all components of the reference so it can be easily found and checked if necessary. This means that students are very aware of the need for academic integrity in terms of showing where certain constructs are taken from and acknowledging the contribution of these authors in their own developing understanding. This convention also drives the students to seek out such references with the idea of developing academic rigour. That for something to be taken seriously it must have as a starting point an academic link. They are essentially using a specific Activity System's artefacts to explore and understand another AS.

They are also expected to have within the reflection a combination of a theoretical component, a particular position derived from their experience on

this theoretical component and an observation from their own practice that illustrates the point they are trying to make. This construction means that each reflection for the learning log should draw together theory and practice whether or not it is meaningful to the student.

This is also an online discussion with the conventions that surround such communications. It is asynchronous with room for multiple interactions between all participants. It isn't public, only accessible through a password and the students were asked to anonymise themselves on the forum. Each student has within the forum their own channel where they post their own reflections for the log, but can have access to other's postings. Besides the students' channels there is a general channel where the weekly activities for the reflections are posted and a random channel where any conversations outside of the academic work can take place.

These are not just the random thoughts driven by the individual's unguided interest, but an academic assessment - something the students may have a strong desire to perform well in. I too have a strong desire for them to perform well, but at the same time maintain strong academic quality. Besides the desire to see good performance on the assessment I am also keen that the spirit of the assessment is realized and that the students gain a more critical stance towards theory through their experience and observations of professional practice. The assessment is shaped by university policy and procedure and AQA guidelines. For me this is also a CL with an aim to alter students' consciousness and provide data for the purposes of analysis.

5.1.2. The frequency of posting and the depth of discussion

The students didn't actually follow the weekly nature of the activity with respect to the posting of individual reflections. It was much more episodic.

Table 5.1: Monthly learning log postings by participants

Jan	5 postings from 5 participants
Feb	9/5
March	26/9
April	26/9
May	91/12

The earliest posting was on January 19th by participant 7 (the activities started on January 9th) and the last posting was May 17th by participant 1.

The date of the most postings was May 14th with 20 postings from 6 participants. The first discussion posting was February 1st (participant 12), the last May 16th (participant 2) and the most discussion on May 15th (5 participants).

5.2. Culture and Community: Contextual differences and the need for meaningful relationships.

The following sections will present excerpts from the students' learning logs exemplifying aspects of the analysis. They are labelled as numbered exhibits.

5.2.1. Work is a foreign country

One clear distinction from the analysis was in the students' perceptions of the cultures of the two AS they were subjects in.

"... while in University I have focused on learning the material set for each exam, whereas in the workplace my learning has been over a much wider area in order to be able to carry out my job." P2 Exhibit 1

In this excerpt from Task 2 whilst the students were reflecting on the situations of their learning P2 in a questioning phase demonstrates how, in comparing the quantity of learning from their previous years at university, the period of placement provided a steeper learning curve. For P2 the behavioural requirements at university are simple, just learn material for each exam, whereas the workplace requires much more. This may, in part, be due to the familiarity of education where students are well practiced in appropriate behaviours. The learning curve for education has flattened when compared to the steepness in learning for the new professional environment as P6 relates later in the reflection process looking at the specific management theories they wished to focus on as a part of the implementation and examination phases.

Throughout my reflections I have discussed the difficulties I have faced as a learner crossing the boundary to a professional. During my store covers I initially struggled to bridge the gap between university and the working world as it involved a new style of learning and membership [of community] previously unknown to me. P6 Exhibit 2

This change in culture is reflected in the chance to negotiate workloads, something rare in the academic world. Learning to say no came as a hard lesson demonstrated by P7's concerns about making a good impression whilst reflecting on Task 2.

The biggest hurdle I have faced so far is the fact that I will have to push back on tasks and sometimes just say I physically don't have time. I was initially hesitant to turn down any task as I thought it would reflect badly on myself but this meant I was taking on too much work to cope and actually not providing the best work I could as I just needed to get the job done. P7 *Exhibit 3*

These pressures and the whole new world they are being thrown into solicit a high level of support whilst adjusting. This appears to be another point of difference between the two cultures. In the workplace, a sense of people wanting to know them and acting in an approachable manner is in stark contrast to their experience in education as displayed in this reflection from P5 from Task 3 while questioning who they had learnt from.

The main difference between my work mentor and the lecturers at university is that I know them and they know me on a personal level and this helps to foster the relationship and makes it much easier for me to approach them with any questions or concerns I have. P5 *Exhibit 4*

This introduces the sense that the academic community is much weaker than the work community. In lamenting the lack of interaction in another Task 2 reflection on the UK education system, P8 makes us aware of this weakness in their experience of education in two excerpts. They may have a strong connection to friends, but as a tool for learning the community appears to be lacking.

This notion of learning something new and sharing it openly with peers to encourage others is not something, as a student in the UK, I have experienced regularly. Designated seminars for certain modules results in only a few students actively getting involved. Even in leadership roles, I as a student ambassador for Marketing in my first year, found that my learnings [sic] were not of interest to my peers when feedback [sic]. P8 Exhibit 5

And again:

As a [workplace] community, it is considered essential to try new things and not be afraid of failure and to rely on one another for the answers. This is not out of laziness or cheating this is because individually you can benefit far greater from the interaction from someone who views things in a different way. At university, there is a sense of competitiveness that adds to the lack of community learning. P8 Exhibit 6

Rather than the atomised nature of education the workplace is perceived as more of a collective. The educational environment is seen as actively working

against the development of community. These weak links in the community go beyond the student body and also encompass the staff as P5 makes clear in a reflection for Task3 considering who they had learnt from. The division of labour at university seems to just exist rather than being perceived as a structure shaping their practice.

During the first two years of university I saw my academic supervisor once and rarely caught up with lecturers outside of lectures. This made me feel like an individual rather than a member of a “community of practice” (Wenger, 2000). P5 Exhibit 7

5.2.2. We all need friends

Feeling adrift in unfamiliar surroundings could drive the students to seek and strengthen relationships with their professional colleagues. Examining the intensity of coding for various themes it is noticeable that the theme of community arises a third more than the next most coded topic. This focus may be partly explained by the early use of Communities of Practice in the CL sessions, but may also reflect the importance of community to the students. This may be understood as a reaction to the huge change they are facing and the complexity of the new.

... as an inexperienced employee faced with a new situation, you are then reliant on other experienced members of the team which is not an efficient method. The encouragement is that we can afford to make mistakes but once made learn from them and learn from others too. P8 Exhibit 8

P8 in another Task 2 reflection expresses this as a need to rely on the experience of others alongside a strong responsibility to learn. P2 builds on these ideas of reliance and responsibility indicating a learning community fostered by the firm through a variety of tools in a reflection taken from Task 1 considering the purpose of academic work in the questioning phase.

The firm that I work for considers itself a training firm where the employees teach each other. I have come to realise that it is a never ending cycle that continues as each person progresses further through the process. [My workplace] has an online resource database that is used for people to post solutions of any issues they have come across. Every member of staff who works for the company is also easy to contact on Skype and so it is possible to go to others for advice. P2 Exhibit 9

In the next exhibit from Task 4 looking at the students' position as a boundary crosser P4 has been dropped in at the deep end required to do a complete piece of work whilst a colleague is away, as is expected in a community, and finding themselves stranded in a jungle of data. The sense of belonging comes through strongly here as colleagues come together to help the student with the problem they have, but also the sense of community comes through as it isn't just the student learning but the community represented by one of the colleagues taking a newly understood formulae into their working life.

This week, as my Rig controller in the region was away, I had to prepare a journal which I am usually sent by her... it was something I was unable to do. I had a vast amount of data, which had I had to complete myself would have taken me hours to complete sorting manually... With the assistance of a few colleagues, we were able to collectively reach a solution. Different ideas were suggested, some of which did and did not work, but which then led to further suggestions. One of my colleagues was unaware of one method of using a formula, which he stated would be useful to himself going forward. P4

Exhibit 10

The students see their community as a source of knowledge, but also a resource to identify how to act and express themselves in a professional environment as P3 from another Task 4 reflection identifies below.

I am learning from my colleagues in a less formal style. Picking up on the way they act and what they say, as well as learning from the knowledge they share. The latter can challenge the formal learning at university... Particularly, the managers in my team make effort to build a relationship with you by informally chatting and getting to know you. It is interesting to see this management technique really works well across the team. Colleagues have respect for their managers, which makes them feel comfortable with them. P3

Exhibit 11

As they gain in experience and develop as members of their community they find themselves in positions of responsibility and, as a part of their community,

taking on the role that they had previously sought for themselves as the next two exhibits show, the first from P1 towards the end of the CL in the implementation phase and P2 for Task 2. They are translating their own experience of the need for relationships into actions that reflect a developing consciousness from within their activities.

When the new starter joined I decided that it would be helpful for her to have the support and information that I missed out on when I first started. P1

Exhibit 12

... there was a set of new starters who then joined the firm. I found myself sitting next to someone who had just started that week, throughout the job he asked me many questions about various things such as how to complete his timesheet and to explain various things. P2 *Exhibit 13*

5.2.3. But it isn't all sweetness and light.

This sense of community and a connection to others discussed above appears to be key in feeling secure. Community and personal relations are being actively sought to help provide support in unsettling situations. When this community is missing and 'belonging' is limited, the placement student can experience anxiety and stress as demonstrated by the next exhibit from Task 3 - when reflecting who the students have learnt from – by P2.

Once I started my placement I was quickly placed into teams and became aware quickly that 'communities of practice' (Wenger, 2000), function much

better if the connectivity is present between team members. One of the first jobs that I was placed on was ran by a girl who had quite poor social skills and came across quite unfriendly often. She made me feel like I had no idea what I was doing and that I was a bit of a liability to the team, which I considered to be quite unfair as I had only just started. P2 Exhibit 14

The importance of working as a community is further brought home in a later excerpt by P2 from Task 6 (considering barriers to their development through a modelling of their AS) when discussing a difficult client and the client's refusal to follow process as the student perceived it.

I found it interesting that he was quick to imply that I was in the wrong due to my relative inexperience, and yet backed down to the more experienced team member. I think this example shows the differences between two communities of practice and a boundary crossing in the sense that our firm has different expectations from the clients' finance team and there was learning from both sides. I learned valuable skills in how to deal with a difficult client, and the client was educated in the correct way to carry out an audit. When reflecting back on this situation with boundary crossing in mind, I am able to fully appreciate the learning that took place rather than just thinking about the high levels of stress that were involved. P2 Exhibit 15

The meetings of two communities helps to bring in to sharp relief the benefits of membership of a powerful community where a more experienced member of the team was able to protect this newcomer to the company. Being isolated

from your close colleagues the community can have a significant impact on the students' comfort.

When at this other branch I met a fellow placement student who I found that I could talk to confidently about my feelings to whether or not she had felt similar during her experience. [...] When I was constantly around the same members of staff at my branch I was complacent and numb to the things I was feeling. P1 Exhibit 16

Here P1, reflecting in Task 3, not getting the community and relations needed, looked elsewhere. There was a need to feel that they were not completely on their own and others shared their feelings. This shared experience is an addition to connecting to their community and provides a benchmark for 'normality'. If not achieved amongst their immediate colleagues then they will look to others.

I feel as though having someone going through the similar process was quite calming, in a sense, that when I started I only had the view of the old intern who was essentially the most skilled she would be for the year and therefore highlighted the difference. By having another person allowed me to tell if I was progressing in the normal standard... It was easy to gain that sense of belonging at the beginning with the assistant as both of us moved from an academic environment to a working environment in the same timeframe. As I had another colleague who would have the same knowledge as me, it was

easy to help each other as we can interact and exchange that knowledge at a level that is comprehensible. P7 Exhibit 17

In these last two excerpts (both from Task 3), the sense of a shared experience grows, of two placement students trying to find their feet coupled with an ability to share their observations, and a form of sub-community develops. To belong is very important and from these excerpts is clearly linked to the affective dimension.

For P1, the road to belonging was long, but once achieved transformed the way that they felt – and the change was ascribed as much to a change in their own behaviour as it was a change in the community - in a greater acceptance that they were a part of their community.

I want to mention the change of sense of community that I felt in the first six months compared to the last six months. I have had a complete change of experience due to different branch managers and the way in which they have interacted with me. This is something that I really want to explore because my journey has gone from not feeling a sense of community at all to feeling like I have aligned shared interests with all of my peers... Lastly, the last mode is imagination, which Wenger states is about the way we think about ourselves as a member of the community. I have struggled with this mode the most and have only in the last few months actually felt like I wanted to be part of the community in my organisation. It took me a while to accept that I would be working as a team for long hours until all of the work is done. Before I felt like I

shouldn't be working late as I felt it was due to disorganisation throughout the day. However, having spent time to understand more the complexities of everyday fleet management I appreciate the need to all be aligned as one team. P1 Exhibit 18

In the above exhibit from the final stage of the CL encapsulating the implementation and consolidation phase, for P1 it hits home that being in a community is for the long haul and this requires a change in behaviour when compared to the weaker community needs of university. We can see that as circumstances change the student's orientation to their community change and the feeling of relief goes to underscore how important being a part of the community is.

5.2.4. The Division of Labour as constrained relationships

The next largest area of discussion (twice as many points of discussion than the next theme) is the division of labour (DoL) and although is primarily an examination of how work is divided between different individuals and groups, the discussion continues the theme of relationships started with community.

Upon reflection, I also find it compelling to discuss the competitive nature of my organisation. When exploring Wenger's 'Communities of Practice' theory I find that whilst my organisation would promote community spirit and alignment of competencies found in their training programmes – I find that they in fact also promote rivalries and competition. Each branch are compared with one

another in terms of customer service scores, operating profit, growth and these just name a few. P1 Exhibit 19

The excerpt from P1 above (again in the final reflections of Task 13) seems to make a note of the behaviours that the division of labour generates and P8 below from Task 2 emphasises how the nature of the organisation affects behaviour the two showing very different experiences of the placement stemming from differences embedded in the DoL.

Thirst for knowledge is shared amongst most start-ups usually with a flat hierarchal structure although leaders do form naturally and they add to paving the way for the company to evolve from the flat hierarchal structure. This behaviour I have noticed is naturally taken on by many of the members in a community these people have not been assigned but they take up their position to drive the latest mantra to follow or the next blog post that should be read over and applied to our processes. P8 Exhibit 20

We can even detect surprise that, even with obvious benefits to the organisation as a whole, parts of the DoL will be resistant to change as demonstrated by P5 below from Task 2 reflecting on where they have learnt.

Although everyone wants to progress the business and ultimately create more profit (this leads to higher pay for every employee through the company's profit share scheme), every department has internal objectives and KPI's (key performance indicators) that they need to meet. When trying to introduce a

new procedure, the idea was met with discontent from a number of stakeholders. Although in the long term this procedure would save time and would prove to be more accurate, in the short term it required data to be re-entered from existing employees. I had to have a number of meetings and send several company wide emails to detail the benefit of the procedure to finally get the key stakeholders on board and for the change to be embraced.

P5 Exhibit 21

From these excerpts we see behaviour as something that grows from the structures that surround the community. The students' note the way individuals operate from their perspective within the DoL begins to exhibit complex decision making processes aimed at affecting the community. As the division of labour fluctuates with the changing needs of the business, P11 sees a change in the behaviour of an individual as a reaction to the change in division of labour from reflections for Task 13.

I have regularly observed how my managers changing leadership style effects motivation within the team and this is something that I will explore in depth in my essay. The paper considers that each leadership style has the potential to motivate and the effectiveness will depend on whether the manager has identified which style works best for their staff... Throughout the year I have been involved in an IT project... The team consisted of a variety of people from different functions, such as finance, inventory management and IT. Each person was highly skilled and most had years of experience. My manager was asked to lead the project. It was interesting to observe how her management

style shifted from a democratic/autocratic approach she uses with my team to a more participative approach with the group of highly skilled people. P11

Exhibit 22

These actions by individuals from within the structure of the DoL not only impact on behaviours but also feelings – see here for P2’s reflection from Task 3.

There was another job a few months later with a different person leading the team, the guy in charge of this job was a lot more encouraging and seemed to understand the need to make the team work. I am working with him again in a few weeks and am looking forwards to what will likely be an enjoyable job. P2

Exhibit 23

Over the year of the placement the role that some of the students inhabit changes and makes greater demands on them as individuals (P6 from Task 2 reflecting on where they have learnt).

This meant as an assistant manager I needed to manage a team of around 20 people. Without proper planning and delegation these shifts would not have run successfully, which would have been damaging for the store (Rees & Porter, 2015). As such, I realised the need to departmentalise the areas of responsibility to the other members of the management team on my shift. This meant that they were each responsible for the running of their own sections, such as produce and bread etc, and ensured there were no off sales and that

the stock holding in the back was being reduced as much as possible. While I was still accountable for the overall running of the store, delegating these areas of responsibility helped the team to remain focused and motivated during such a busy period. P6 Exhibit 24

The placement students take time to realize their position in the hierarchy and the behaviours that are expected of these roles. So even where the roles for the DoL are opaque the student manager needs to put in place well defined roles as a matter of good discipline - defined as motivation and focus above.

Delegation is a subject I have reflected upon previously within my journals and as a result is a area of continuous development for myself. It is not a skill that comes naturally as I am innately an independent worker. As a result, I feel my skills in this area were particularly underdeveloped before starting my placement. P6 Exhibit 25

The behaviours expected from the student don't always feel natural and the student feels a need to adopt certain behaviours that are necessitated by circumstances, but they feel ill prepared for such expectations – the behaviours driven by the needs of the division of labour are not always welcome.

This is going to be an on-going problem and still affects me when dealing with more senior colleagues who feel someone 'beneath' them shouldn't be telling them what to do. Leadership isn't about seniority (in rank or age), but about

how you get someone to do something. I'm not at all suggesting this is easy, just that it is a skill we need to develop to become effective leaders. P10

Exhibit 26

Here for P10 (from discussion surrounding the reflection from Task 1) the command and control structures evident in the division of labour are a constricting and constraining force when trying to lead in their organisation, the division of labour is something that is struggled within and not just a way of distributing work. The students strain to make themselves 'heard' in strict divisions of labour and even where they are given responsibility for a task come up against resistance.

This means that I often face dilemmas as an area manager when providing feedback to managers in store. On the one hand I must follow procedure and highlight errors in operations or provide feedback [on] poor KPI results, but on the other hand, I feel very aware of the difficulties faced in store and feel that at times common sense strays from such procedures. This dilemma can often affect my performance as an area manager as I feel a sense of duty to both communities and divisions of labour, but also to the rules, regulations and procedures outlined by the company. P6 *Exhibit 27*

Here (P6 from Task 6 reflecting on barriers to development whilst modelling their AS) we see a tension between knowing what has to be done and knowing the conditions that exist and this can undermine the desire to do what is required. And yet still the student is required to apply this discipline and it

generates divisions of loyalties underlining this feeling that the DoL is more than just a division of work – its blindness to circumstances can lead to inefficiencies within the division of labour.

I have found that my style of management has changed drastically throughout the year and has often depended on situational factors as well as my personal nature. Working with cooperative and uncooperative teams within store has meant my style of management adapted to those around me, as well as to the context and environment I am in. Working within teams at head office requires a different form of management to the direct style I portrayed in store, as I am managing my relationship with colleagues, rather than the performance of my employees. This element of management requires a completely different skill set to that in store and is an area I would be interested in talking about. P6

Exhibit 28

Here, for Task 10 reflecting on an essay title as part of a implementation phase, P6 goes on to notes how different types of behaviour are required to maintain a discipline in the workplace under very different conditions and develops this further in the next excerpt. The need to get the job done overriding the 'personality' of the student and in turn affecting their position in a community.

As my time at store #59 progressed I developed into a confident Theory Y leader, assuming that the subordinates within my store were happy and willing to work with goals other than remuneration within work (Carson, 2005).

However, one particular shift, [an] increase in daily sales meant all team members were restricted to checkout duties and could not complete their daily task lists. As a result, [they] were asked to work a 20 minute longer shift to make up for the lost time... However, one employee refused. As shift manager I had to ensure that this individual was made aware of the consequences of his actions and meant I changed my management style with this individual. I adopted a more autocratic role within this circumstance... From this I learnt that although Theory Y is my preferred management style, based on my assumptions of workers motivation, it became clear that not everybody had the same work ethic as myself. This meant I had to adapt my management style to ensure I was able to get the best out of each worker and be as productive as possible. For most within this store, this meant adopting a Theory Y style of management, however for the individual concerned, a more autocratic style lead to better results. P6 *Exhibit 29*

The students are not simply accepting of the DoL as we have seen, but at times they seem intrigued by more senior team members attitudes.

I have found I have discussed the academic element of my placement quite regularly with the senior executive on my team. During my placement he has been helpful giving tips and help in all areas of work and as he was on placement in the same company 3 years' prior, he likes to relay his experience and to help guide me through this year. What I found surprising during these discussions was that he did not see the reasoning behind the academic work for the year. P7 *Exhibit 30*

In reflection I found it interesting to realise that even as an area manager (the most senior member of the company I work alongside) there seemed to be a lack of insight that you'd expect from somebody superior in the chain of command. It felt like he was reluctant to explore theory for he was too comfortable in his own routine and felt more comfortable with a "learn as you go along" method. P1 Exhibit 31

The reflections by the students above (from Task 5 looking at attitudes towards their academic work) show how the DoL has the potential to shape their views, but that it isn't a straightforward process. Here we can see that the students are surprised that their managers either don't see the use of their academic work or the point of theory. From the discussion of community we can see how much emphasis the students place on the relationships around them, but here, with the DoL, we see the complexity of the relationships within the workplace and how often it can be a source of inner contradiction for them.

5.3. Rules and artefacts are complementary

The complexity of the workplace is often most evident in the way that rules operate to govern the behaviour in a division of labour. It is often in this area that contradictions can be identified and students pulled in a variety of directions as other aspects of the AS apply pressures around competing rules and their interpretation.

Initially, I was confused as to why there were contradictions in my targets at work [between having enough stock to service market need and not having too much money tied up in stock]. The contradictions also made me feel frustrated as if I was fighting a losing battle. I have not been able to resolve the contradictions as an inventory analyst (otherwise I think I would be out of a job), but I have learnt how to manage/control the outcome as best as possible.

P11 Exhibit 32

In the boardroom-training environment you are taught about ethical decision-making. In my organisation the branch and employees individually are ranked on our sales performance, which is indicated by the way a transaction is put through on the computer. I have experienced managers who will alter transactions to skew the results to try to make our branches sales figures above target. However, I have experienced managers who are completely against doing this, which causes confusion as a newcomer... I can link my confusion over rules and regulations to the inability I found over aligning to one set of principles. Business is never black and white and there are times when doing something a certain way is accepted but doing it again in a different circumstance isn't accepted. I struggled to grasp where there [sic] line was drawn with some of my managers ideas on manipulating sales figures to our branches advantage. P1 Exhibit 33

As these two excerpts (P11 from Task 6 modelling their AS and P1 from Task 13) demonstrate the contradictions generated both by competing rules (P11) and by differences in application (P1). They cause significant confusion for the

placement students and there is even a feeling of incredulity that rules are applied differently. What is the right thing for them to do? Is there a right thing? Understanding how to apply rules can be very unclear for the students even when they develop coping mechanisms – these seem to simply satisfy the need to keep moving.

Recently, one of our markets overspent on one of its budgetary allowances, in an effort for management to establish better control, restrictions were placed on other parts of the budget including a temporary employment freeze. This was viewed as a means to establish 'control' by management. This in turn has created shortages in some departments creating an increased workload on some employees which [sic] could threaten to destabilize employee motivation. (Affecting the employee retention targets) Piecing all this together, failing to achieve one target led to management making a decision to what was perceived to be the problem and the decision ultimately impacted another target... P12 Exhibit 34

Through the application of new rules P12 (in Task 13 part of the Implementation phase) notes how the DoL applies its control over a community, but feels that that control, that discipline, actually operates against the interests of other elements in the DoL. Once more the student seems surprised that management would make these decisions yet doesn't necessarily appear to appreciate the difficulties that management may be facing in these decisions. The students can see the complexity, but seem to

want something simpler – less confusing and more black and white – trying to place issues in tidy boxes that can be easily addressed.

This can be aligned through the sorts of software used by a company, its processes, their communication platforms. These essentially are individualised to a specific company. They are formed over a period, tried and tested to make sure it works for everyone and for all they aim to do to the best of their capabilities. In my experience, as we are open to trying new platforms to constantly evolve and better our practices often we switch platforms and ways of logging information in accordance to our team. This in comparison to a hospital, they immediately need to align their processes to meet the tight time, cost and efficiency KPI's. Therefore, large amounts of money are spent on systems by the hospital which [sic] are designed to hold a large amount of data, however, even if these systems are archaic they will usually not have a choice due to such high switching costs. P8 Exhibit 35

Unpicking the excerpt from P8 (from reflections for Task 13 in the implementation phase) we see how the student perceives the artefacts and tools utilised by an organisation as shaped by its culture. P8 talks about how their own organization is driven by the needs of the outcomes for a project, whereas they feel that in their partner organisation (from the public sector) it is the pre-existing tools that drive organisational development and ultimately drive the outcomes.

I sometimes found that In order to understand the skeleton of the business from the bottom I needed extra help from my managers. University had prepared me in some sense by the modules that I had completed. However, I found that in the workplace they use specific altered versions of theory frameworks to fit their own individual needs, which took a while to learn. P1

Exhibit 36

In this highly complex environment they feel that the artefacts from within education don't prepare them for the specific and highly contextual world of work. P1 once more shows the friction between the artefacts and rules of different working environments (academic and the placement – from Task 13). It is in this friction that the placement is arguably providing a space in which to explore theory in practice.

The business is currently in a very interesting phase with a re-structuring of the debt in progress and a centralisation of some processes to the offices I work in, in place A. The business itself is very complex and diverse with several different entities all registered all over the world and operations carried out in many varied and interesting locations all over the world. The decisions made by senior management regarding the structure of the business and how it operates would be intriguing to investigate further with regards to the theoretical principles they follow. P4

Exhibit 37

P4 above (from Task 9 reflecting on theories for use in an essay – part of an Examination phase) displays just this desire to examine further the impact of

rules on decision-making but also hints that it is theory that will help them to unpick this Gordian knot of influences. The students are becoming steadily aware of how decisions are framed not just by the desires of managers or the needs of the business, but through the rules of business and the artefacts they must consolidate in their decisions.

5.4. The Subject and Objects of Activity.

It is interesting to note how less well developed the subject and objects of activity are by the students in their reflections. The students focused primarily on the community they work within and the artefacts, tools and rules that shape their working environment. But as we examine the students' conceptions in the areas of the subject and activity we can see further signifiers for the contradictions they face.

I also identify with many communities such as placement students, store management, area manager and university student... As I often adopt the role of assistant store manager and area manager, and swap between the two frequently throughout my placement-training programme, I feel I am a member of both communities and have an understanding of each within the company and retail industry. P6 Exhibit 38

As is shown by the first excerpt (from Task 6 modelling their AS) P6 feels the pull of many communities. This shared notion of the subject in the AS is explicit and has a number of implications regarding their conception of their situation. Below, P5's interesting discussion of identity and belonging

accentuates the pull between student and employee - at times expressing feelings of homelessness. However, even though they have to perform academic duties as a part of their placement, they feel their ties to the education community weakening with distance and a lack of societal connections. In contrast, the identity of their employee self strengthens as they feel the products of their effort allow them entry to their placement community – the object of activity (represented by their effort) frames their membership, in effect, without the object of activity there could be no community. Therefore the pull of the immediacy of the workplace activity appears to dominate the placement students' consciousness (shown below by P5 also from Task 6).

I am both a placement student and an employee and at times I feel as though I have lacked a community of practice (Wenger, 2000) due to being in the boundary-crossing phase. Although having university work to complete, being away from Liverpool and no longer surrounded by students has reduced this sense of community. My sense of community for being an employee has strengthened as my placement has progressed. Initially I felt as though I did not belong and I was quite reserved, which resulted in less interaction with colleagues. After seeing the value of my outcomes and realising that I am capable of completing work to the required level I became more confident, allowing me to feel a part of this community... P5 Exhibit 39

P7 (Task 6), below, further demonstrates the links between membership of a community and the competences required, and adds something more

complex and more interesting. As their 'trading identity' has strengthened and they have felt more accepted by this community, they have actually felt stronger in their student identity and able to have a mixed identity. It seems that in the early days it was necessary to put the student identity into a form of suspension to help develop the new identity, but once developed the energy required for the emerging identity was liberated making it easier to incorporate multiple identities. This isn't typical in the student accounts but serves to highlight the need many have for a simpler understanding of their situation as opposed to this more complex perspective. This is a potential carry over from their education AS where they are well practiced and have a series of performative methods to adopt that capture this level of experience and allow simpler acts of decision-making.

My identity will be made up of my competence and experience (Wenger, 2000, pp.239) so as I have progressed over the year this identity will have changed dramatically. I believe that I was truly focused on creating my trading identity in order to truly become part of the community so did not see the point or wanted to move away from the student one. I feel now though that I have become part of the community, it is easier to have both as I have been accepted as part of the... It doesn't feel as though I have crossed a boundary with my student identity but I have created a new one when I began my placement... It is now possible for me to have a mix of identities once I have created this new one. P7 Exhibit 40

5.4.1. The Object of Activity

The discussion surrounding the objects of activity seems to be dominated by discussions of the contradictions of having multiple 'objects of activity' as a product of being the subject in multiple AS. The unexpectedly large workload in the workplace is clearly a significant demand on their time and the academic side of the placement appears to become a distraction, something that isn't helping them to prepare for the immediacy of the work they have. These are clear expressions of a dilemma such as these below from P3 and P1 for Task 4 reflecting on being a boundary crosser, and P7 for Task 5 reflecting on attitudes to academic work.

In particularly busy periods it can be difficult to get the academic requirements done. During those weeks' I tend to think less about topics for the weekly reflection. P3 Exhibit 41

I have found that in University you have a thirst for knowledge and you want to learn and excel in your results. However, sometimes in work there can be times where I have found myself thinking "I want to just come to work do my day job and go home" sometimes neglecting the actual learning and expanding on my knowledge... P1 Exhibit 42

[...] at first I thought that having the link to theory and weekly work to do would be an excellent way to keep on top of new theoretical findings within the industry. However since beginning I have yet to truly find a practical theory to relate to my work. There have been plenty of blanket theories that can be seen within the workplace and what I have personally seen but nothing that

would be particular to this. I feel as though getting the views of colleagues on what they feel about the work has made me less enthusiastic about exploring this theory and I am merely beginning to see this as another weekly task to complete. I am starting to think whether I now have this view as it seems as though it would be the thinking required to be part of the type of community explained by Wenger (2000). I think that I was more focused on earning my place in the community than completing my weekly logs as that is where I am at the moment. I was trying to create my work identity and did not think that understanding and finding theory in practice was going to help. P7 Exhibit 43

It isn't just that the academic is a distraction, but after a hard day all they want to do is go home and recover from the days exertions. Theory hasn't made the very specific components of the work placement easier, and actually gets in the way of the important task of becoming a member of the community through developing competence. However, once this task of becoming a member has been embedded then the other component of the placement is allowed to develop a role in its own right. It isn't just their own lived experience that is shaping this but a level of conflict surfaces from within their professional community (shown here by P2 and P8 for Task 5).

Conversations that I have had with my colleagues about my academic work have shown they all have different opinions regarding whether it is necessary or not. People who are closer to my own age and level had the opinion that it was just added work, and therefore unnecessary as I already had enough to be getting on with. My line manager however was far more interested in the

work that was required from me. She thought it was a good idea to reflect on my development as I progressed through my placement. I think the main difference between the two viewpoints was experience. P2 Exhibit 44

However, the conversation I had with other colleagues, they were not intrigued at all. Mostly they seemed confused as to why we were having to do university work alongside 'actual work'. P8 Exhibit 45

Attitudes in their communities can make this identified contradiction appear worse. The students seem to find that discussions about their experience generate a range of opinions and seem to feel the need to choose which to side with. Here we can feel the pull of the people who don't see the sense of the academic side of their placement and the manager who does. Is it the lure of the 'experience' that will win over?

Although, it can be difficult at times to balance a large workload, the desire to learn new processes and skills, as well as delivering on the academic side of the placement. Some views in the team are negative towards the academic side as they think it may be a hindrance. "We have an experience that opens our eyes" Wenger (2000), this for me was through the question from a colleague of "does the academic element help prepare you prepare for the work afterwards?". It can seem as though at times, "this experience does not fully fit in the practice of our home communities". P3 Exhibit 46

The weekly reflections have reminded me that I am in fact still a student, the aim of the year is to learn and not simply be a year of work experience... I do, however think this can be easily forgotten, by not only myself but colleagues and managers [sic]. It is easy to get caught up with work particularly during busy periods, mainly month end. This view is one shared by most colleagues in that the main limit of the academic work is that it can often take a 'back seat' to my day-to-day work. P4 Exhibit 47

As we can see from P3 and P4 (Task 5 and Task 6 respectively working through an Analysis phase) above, caught up in the immediacy of working outcomes the academic outcomes can become lost - taking a 'back seat'. As we can see from the general discussion in this chapter, the academic AS is becoming more distant as the placement proceeds and the closeness of the placement AS overshadows the academic portion of the placement period. The idea of learning is becoming fractured, again maybe reflecting a need to control complexity – trying to bracket the cognitive challenges to manage new practices.

This week I had a chat with my manager about theory and how it is or is not used in practice. She understood that learning theory whilst at university is necessary and after explaining what my course entails, thought that learning about various theories is needed as there are no practical elements to experience whilst in Liverpool and physically at university. As the L&D manager, she created a new theoretical approach to learning and this is now applied throughout the company. My manager describes the learning process

as a journey and in particular an “EPIC Journey” (Law, 2016). This places a greater emphasis on actually going out there and experiencing new things, which is supported by Wenger’s paper and in particular becoming part of a community of practice (2000), rather than on traditional face-to-face courses. The academic element falls within the “Investigative” section of Law’s EPIC framework and I think it is rightly overshadowed by the main practical element of the placement year because this is where I will learn and develop the most, with the academic requirement acting as a supporting tool for reflection. P5

Exhibit 48

It is interesting to note here how the P5 engaging in Task 5 is trying to use theoretical constructs from their workplace to understand the role of the academic in their 'learning journey'. The academic is investigative, but 'in what way?' we are left wondering, and 'rightly overshadowed' by the main practical element of the placement – just a supporting tool. Interestingly P5 captures artefacts from the academic AS thus allowing P5 to justify their behaviour using the conventions of academic referencing giving voice not only to the tension they see, but to frame it, and then validate their actions.

The reason I said that the ‘academic skills is secondary’ is due to the greater benefit in my opinion of being in a new environment, mixing with new and more experienced people and being forced to apply what we have learned throughout our education into real work. By academic skills I was referring to reading papers and actually doing the learning logs and referencing, although

it is important to ensure these skills are maintained for final year it is not the main objective of the placement year. P5 Exhibit 49

Further along in the reflection for Task 5 we can see that for P5 academic skills are narrow in scope (reading, reflecting and referencing), just for academia and are simply a set of skills for use in their final year, something to be forced to examine through practice, yet not really key to their placement year.

My colleagues have varied views of the academic work I have to complete. Some see it as a useful reflective tool, and one which [sic] helps tie the work I am doing at Seadrill to my university studies. Others saw it as less useful, particularly the weekly logs. In the finance function we effectively work on a monthly cycle, which is almost identical every month and so therefore they believed a weekly log would become quite repetitive. At first I may have been inclined to agree slightly with that statement, however as time has passed the usefulness of a weekly reflection has grown clearer and as other colleagues suggested, it provides an excellent reflection tool. It is not a log of what I have done in work, but of how I have developed during my placement and allows me to analyse the many positive impacts it has had on my learning experience as a whole. P4 Exhibit 50

As P4 demonstrates in their reflections for Task 6, although they see the academic element as a distraction in the early days of their placement, as time progresses they seem to come to identify how it is helping them to make

sense of their time on placement. Moving on P4 laments the way in which his student identity has been subsumed by the employee identity reflecting for Task 7 (looking at the relationship between theory and practice) and that this has led to a downgrading in their development.

Although the year has proved a very useful and rewarding experience, there have been some slight negatives. I feel as though I have been treated more like a regular employee than a student, which, although in many ways is a huge positive, has at times made it difficult to align not only my academic studies, but also my learning and development as a student. P4 Exhibit 51

5.5. Conclusions

This chapter examined the findings from the Critical Hermeneutic analysis of the data obtained by the students work in the CL, specifically focusing on the first two moments of analysis – specifically the formal and the socio-historical. These two moments provide a basis for identifying how intentionality, symbols, and social-historical elements combine with the conventions and structures of the text to provide insights into the focus for the discourse contained within the text. The text here comprised of twelve critically reflective learning logs produced for the purposes of assessment of twelve students on placement in a professional setting. These analyses have been framed by the components of CHAT as a tool to structure understanding of the unfolding experience of the placement and appreciate the affects of interactions between the various components.

From this initial assessment we can detect a strong thematic component relating to student conceptions of increasing complexity. By looking at the culture of academia and the commercial settings they find themselves in, the students identify a shift in complexity from a place they know well to a more challenging setting permeated by the unknown. They have spent over a decade in education training in a specific form of activity, but have now moved, for a brief episode, into the professional setting of the workplace. Here they meet a combination of complexity and high workloads and begin to feel that education hasn't prepared them for such a situation. Complexity is reflected in the tensions they see in the DoL and through the differing interpretation of rules through the DoL. Rejection of theory and resistance to the academic portion of the placement reflect the limited role they see for education in this new experience. As a shared subject of two different AS they suffer a significant amount of stress primarily directed at the objects of activity for the workplace and the academic, but not limited to these.

It appears that the unsettling nature of the stresses related to this new context leave the students seeking a return to the simpler times provided by education. This isn't a wish to be back in education, but is a desire to understand this new environment and develop behaviours well adapted to the demands of the environment – echoing their expertise in education. It is in the stresses of coping that the importance of the relationships around them grows and the community is seen as a possible place of safety. In prioritising their time, because the education side of the placement doesn't provide any obvious utility in understanding working life, it is down graded and seen as a

distraction. The focus of their activity is their relationships, and the actual object of activity for the workplace becomes a means to developing their relationships and becoming full members of their communities. Once this is done, other possibilities can be envisaged.

The role of the community is developed as a resource, as a source of support and a source of changing behaviours. For some students, the language, norms and values of their workplace begin to permeate their discourse, strengthening rejection of the academic. For others there are hints of resistance to their community and feelings of poor alignment to who they are as individuals. The impacts of relationships are further emphasised when probing the DoL, especially in the conflicts shaped by the application of rules. These findings provide the basis for the final moment of CH analysis where interpretation/reinterpretation of the student placement experience is pursued in light of the impact of the CL. The next chapter will explore how these findings provide insight into CHAT as a theoretical tool to understand the theory/practice dichotomy of the student work placement, and will seek to identify barriers to students seeing management theory as relevant to their professional practice. Ultimately it will provide an answer to how an online CL can support students to move from the abstraction of theory to concrete practices.

Chapter 6. Discussion

This chapter will utilise the findings outlined in the previous chapter to explore the placement student experience through the CHAT framework but also use the case of these placement students to examine aspects of CHAT. It will seek to address the research question by demonstrating how, through the use of the double stimulation, to guide the students in an exploration of the contradictions they face in their placement situation and recognise the utility of management theory in the concrete practices of a professional setting. It will also show how the exploratory online CL proposed here provides only a partial answer to this problem.

It will start by looking at how the students' perceptions of education lead to the marginalisation of management theory as a tool to intervene in their professional environment. It will look at the situation of the students through the sense of conflict the students face with regard to the work they must do for both their academic AS and their workplace AS. It will show how the combination of perceptions of education, workload, and the movement from a well-understood set of social practices to those that are less settled and poorly understood, lead to management theory being a weakly mediating artefact.

The chapter will then look at the manner in which the students have sought to resolve the contradictions that they face and look at this through the shifting modes of mediation and transposing the object of their activity in the workplace from a productive object to membership of their professional

community. The contradictions in the workplace are then further examined to explore the relationships between AS and the various components of the AS to introduce the idea of mediated mediation and mediation as a vector that comprises of a magnitude of mediation and a direction of mediation. It will further introduce the idea of a lower and upper edge to the zone of proximal development and the role of power in traversing the ZPD. The students' move through the ZPD will then be discussed and their reconceptualise the object of the academic activity. To finish the exploration of the placement experience, and in closing the hermeneutic circle' I will look at my experience and the changes that this research has had on my practice and the way in which I see the placement experience.

6.1. Caught Between the Rock of Education and a Hard Workplace

As suggested in the previous chapter, the workplace is a new environment for the students, a setting they are unlikely to have encountered before. The previous decade and a half has been dominated by education and the obligations placed on a student rather than work and the requirements of being a professional (Engeström 2011). This transitional setting is the key to appreciating the nature of the placement student's position, the learning they go through, and the variations in outcome that it can produce (for examples of this see exhibits 2, 4, 5, 41 and 42).

The situation of the students is typically defined as boundary-crossing (Engeström, Engeström et al. 1995, Engeström 2007a, Ellis 2008, Akkerman, Bakker et al. 2012), a creative movement in to the unknown to develop new

conceptualisations (Engeström and Saninno 2010). It is the movement through networks of AS (Morselli, Costa et al. 2014) collaborating to both seek and give help (Edwards 2005). From exhibits 10 and 11 we can see how the students are expected to provide value to their organizations and be an active employee in the processes of the company, but are also looking to develop and learn at this interface where confrontations between theory and experience lay (Konkola, Tuomi-Gröhn et al. 2007).

Education is a game bounded by the 'gold standard' (Engeström 2011). It is a game the placement students have spent many years understanding and practicing through repetition to a point of mastery. As students of a UK Redbrick institution they have been successful at each key point in their secondary education. Good GCSE grades leading to wider opportunities at level 3, and then good performance at level 3 opening up the opportunity of going to what would be considered an elite institution. Examination and the ability to understand what each exam they face requires has been the focus of their actions for many years (for clear symptoms of this instrumental approach see Exhibit 49). Typically they perceive the ability to interpret marking guidelines and then recall the masses of information they have 'learnt' as the core skill requirement of education. An environment defined by certainty surrounds them. The answers for the exams are already known (Engeström and Saninno 2010), there are multiple examples questions and exemplary answers to these questions that the students can utilize to hone their practice; they are well-trained exam machines. It could be suggested that HE is somehow different to the previous forms of education and that the ability to

cope with uncertainty is an important graduate attribute (QAA. 2015, p12). Yet it is interesting to note how often the placement students still characterise HE in the same way. Their training has been thorough such that they have developed specific behaviours from which they are loath to deviate.

Their arrival in the workplace disrupts this sense of certainty proving to be an environment of intense ambiguity. That their world has been one of certainty and amenable to specific behaviours, moving into a space where previously hard won skills are not of primary importance emphasises their weaknesses in many other areas. These students have been characterised as 'good students', 'top dogs' in the academic world they have inhabited, for much of their lives. In the workplace they are just another employee - no longer the 'special one' – rather, they are a cog in a large machine (see how in Exhibit 15 participant 2 discusses how a client relates to them as compared to a more experienced team member). They must once more start that difficult task of understanding the world; a setting where they can identify no obvious ties to their previous existence as a student (Engeström 2011). This can prove an overwhelming early encounter with the workplace leaving them feeling adrift, lacking in preparation and with so much to do and a number of participant 1's Exhibits (16, 18 and 19) reflect this deeply. Frustrated, stressed, and possibly angry, they must now construct new meaning for themselves.

This interpretation of the placement student situation is reflected in the way that they discuss their attitudes towards their academic work in their learning logs. Exhibits 41, 42 and 47 clearly show how the students see their academic

work as a distraction to the 'real job at hand'. If the theory that is taught in education is simply a set of mnemonics to be memorized for an exam, then it is of limited use in the workplace - they are not being assessed in the workplace, they are being asked to complete tasks. Furthermore, the tasks they are being asked to complete in the workplace appear devoid of theoretical content in the students' eyes, disconnected from the academic endeavour they still have some stake in (see Exhibit 43).

Contradictions are not just problems, but are structural tensions built up over time, and are reflected in 'disturbances and innovations' (Daniels and Warmington 2007, Engeström and Sannino 2011, Bourke and McGee 2012). The literature discusses a variety of contradiction types including the primary contradiction identified as the contradiction between the use value and exchange value of a commodity (e.g. in education), secondary contradictions between the corners of the AS diagram, tertiary contradiction between motives towards the object of activity and quaternary contradictions between the AS and its close neighbors (Engeström 1987, p103, Canary 2010). For the placement students the contradictions manifest in two different ways. Primarily as a quaternary contradiction (Engeström 2001, Engeström, Rantavuori et al. 2013) involving the objects of activity for the academic and workplace AS where the student is a shared subject (Exhibits 43, 44, 45), and as a further quaternary contradiction involving the motives towards the academic object between the academic supervisor's AS and the student's academic AS (Exhibits 41 and 43).

As we track backwards we can see secondary contradictions arising within the rules of education, and a tertiary contradiction between the rules and community of education (Engeström 2000). These lead to a particular outcome for the student's academic AS - one of training for exams rather than the preparation for the world of work they expect. In this process the meaning of the object of the educational activity is lost (Engeström 2011) in a multi-voiced educational setting. This distance between what is expected of education and what it produces in the consciousness of the students leads to the discourse of contradiction we see in the learning logs between the different objects of activity and is the realisation of a multiplicity of contradiction throughout their AS.

Besides the clear conflict that the students feel between the academic and workplace objects of activity, they are also facing contradictions between aspects of their workplace AS. These can become manifest in a variety of places (such as the tensions discussed in Exhibits 28, 32, 38) but are a reflection of the complexity that the students are trying to make sense of as they settle into their new working environment and the contradictions in the wider educational AS. It would be hoped that they would make use of the management theory learnt in the first two years of study at university to help in this sense-making process, but their practice developed over many years in education limits this possibility. All of these contradictions are a battleground for the students as they fight to make sense of this alien environment (Eri 2013).

6.2. Towards Resolving a Multiplicity of Contradictions

The student, to be able to perform as a professional, needs to address these manifestations of contradiction and find a way to resolve them. Expansive learning is a specific form of learning arising from CHAT. It occurs when an AS requires redefining and restructuring and can be seen in boundary-crossing situation such as placement students find themselves in (Ellis 2008, Akkerman, Bakker et al. 2012, Teras 2012). Expansive learning is the product of aggravated contradictions and occurs when the object and motive of an activity system are reconceptualised (Engeström 2001, Sannino 2014). The early attempts by the students to resolve the contradictions identified above, from the perspective of Expansive Learning, can be seen as less than expansive as they reject the object of the academic AS. From P6's discussion of the use of management styles (Exhibit 29) we can see how they seek to simplify their new world mimicking their successful strategy for mastering education (Engeström 2007b). It is a rational response based upon their past experience. This is actually an attempt to abstract their situation, descending from the concrete to the abstract, as opposed to the ascending from the abstract to the concrete of expansive learning (Engeström 1987, p12, Sannino 2011a). They recognise the highly interconnected nature of the working environment, but comprehending this in its entirety is too difficult and so they need to strip out some of this complexity in a process of sense-making.

It is interesting to note how they describe their own AS when they went through the modelling component of the CL. In the learning log activity for week 6 they are asked to draw their own diagram for their AS and from this

identify the contradictions in their activities. They are provided with a guiding document that shows the AS diagram, an example using the supervisors AS and a blank AS for them to complete. Even considering that they were driven in this direction, not one of them separated out the academic and workplace AS, but combined them - they are doing one thing, being on placement and this has a multitude of components ripe for contradiction.

6.2.1. The Magnitude and Direction of Mediating Vectors.

In seeking to resolve these contradictions the placement students appear to reject the object of the academic AS but something beyond that is occurring as they reshape their workplace AS. The rejection of the academic activity in the placement experience is expressed as a conflict (Engeström and Sannino 2011) leading to the dismissal of pointless extra work encapsulated in the learning logs - a reflection of the lack of comprehension for the rationale underlying their academic AS. CHAT would suggest that the academic learning surrounding business is the externalised public meaning made of business by the 'other' (Daniels 2009). The varied collections of academic literature on all kinds of business related material from the various functions of business, through management styles and into the economic/financial environment are the considered abstractions of both academics and business practitioners. The students may be questioning the need for the extra work in the learning logs, but what they are discarding (or at the very least limiting) is the mediating value of the artefacts (Saninno 2008, Sundberg, Areljung et al. 2016) produced by academia - they are unable to bend them to their needs (Engeström 2011).

This expression of the weak mediating force these artefacts have for the students stems from the suggested contradictions in education. In being trained to pass exams, academic artefacts are stripped of their sense-making component. If an artefact (here academic theory to be examined in the learning log) lacks the ability to provide a means by which the students can creatively form actions to achieve their needs (Virkkunen and Ahonen 2011), then it is also stripped of its ability to mediate in any meaningful sense. If academic articles are stripped of a mediating role then their utility is lost and with it any meaningful role for the academic activity of the placement. It is left as a mere distraction from the job of real work. This raises questions regarding mediation and the conditions necessary for mediation to occur (Daniels 2004, Daniels 2009). It is not just that artefacts are tools for mediation between the subject and object, but they require a sense that they do mediate, that their mediation is necessary, and therefore have a requirement to be decoded for the purposes of mediation – the process of internalisation.

Furthermore, this raises questions regarding the mediating relationship. I have previously drawn a connection between the use of the term vector by Pierce in Engeström's lineage's of CHAT (Engeström 1987, p63) and the way in which CHAT defines mediation and mediators (Daniels 2004). Vectors can have two possible meanings, that of a transmission pathway, reminiscent of the 'pathway of influence' described by Engeström for mediating artefacts (Engeström 1987, p78). The other way is to think of vectors as quantities that have more than one component, magnitude and direction. In this examination

of the rejection of the academic we have discussed how it is a rejection of the academic content as represented by the academic literature and its potential to mediate an understanding of the business environment. This would imply that that the mediator has been blocked or attenuated - and if we extend this in to the second meaning of vector it further implies that the mediating possibilities are either misdirected or have a magnitude of 0. Within an activity there are many possible mediating artefacts but not all of them are made use of. Of those in use each has a different level of influence on the understanding of an activity, in influencing consciousness and therefore the behaviour of the subject. The Activity System is less a collection of equilateral triangles than an interaction of scalene triangles (see figure 6.1)

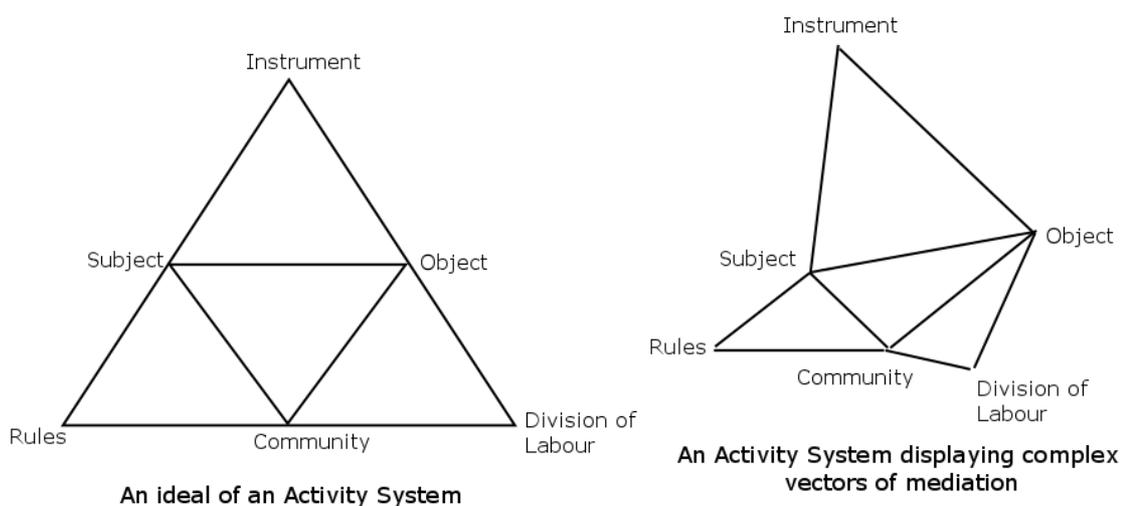


Figure 6.1: The ideal Activity System and a possible concrete realisation showing differences in vectors of mediation between the various components

With one potential mediator heavily attenuated in the student’s process of internalisation/ externalisation (Edwards 2005, Blunden 2007) we begin to see how another mediator steps in to act as a tool to reshape the actions of the students (Virkkunen and Ahonen 2011) and therefore the object of their activity. If the students are rejecting the use of theory in the sense-making

process they are engaged in at the workplace then what are they using? They appear to move from the theoretical constructs available to them from the academic world towards the use of the collective intentionality that surrounds them (Kerosuo, Kajamaa et al. 2010, Johansson 2014). They are not rejecting collective public meaning-making as a whole, just one form of it contained in the academic. They are still looking to the experience of others for direction, but to the 'other' that is closer to their practice setting and physical location – the community of their workplace AS (for demonstrations of this orientation towards community see Exhibits 8, 9, 10, 23 and 30).

This process helps inform CHAT's characterization of the organisation as a multi-voiced place (Engeström 2001). CHAT is not simply indicating there are tangible perspectives in an organisation, but is using the voices as signifiers of mediation. It isn't just that these voices compete to be heard but that in being heard they influence, they mediate – specifically, in competition, each is seeking to be a strong mediator (Engeström and Sannino 2010). We have seen how a mediator can have a magnitude component in the discussion of the weak mediation of the academic above. We could also suggest that the manner in which a mediating artefact is directed (a second component of a vector) can have an impact on the mediated. The academic as a mediator has been directed towards the outcome of exams rather than in understanding the world. This misdirection means that it is less able to act as a mediator for the placement students in their world of work and its strength as a mediator is therefore inhibited. It is not just that there are many competing voices in the environment fighting to be heard, but that there is an ambiguity in the

internalisation of these voices (Engeström and Sannino 2010). This ambiguity is a space in which the students can create their own meaning. Making sense from the ambiguity is internalisation/externalisation, a process by which activity, action and operations are transformed (Bligh and Flood 2017).

6.2.2. Towards a New Object of Activity

So if we consider the academic voice to be a weak mediator in the process of internalisation, the density of the discussion surrounding community and the DoL in the students' learning logs makes sense. They are acting as a fresh source of mediation substituting for the academic. The academic learning log became an obstacle to be negotiated – an agreement about what should be done is forged and then navigated; for the placement students it is extra work with no purpose. The students' educational training has made them blind to the possibilities in the academic and it is now a barrier to actually doing what they feel should be the focus of their effort. It is in the community that they find their purpose, their motivation for action. The entity that enables us to act is imbued with a power that elicits an effective motivator for activity becoming an object for mastery - to be a full member of their community and recognized as such is the outcome the placement students seek. *'Publicly visible actions serve as the ground of recognizing in the other another self that recognizes in me its corresponding other'* (Daniels 2009, p34).

It is through the object of an activity that motivations are carried as a future-oriented purpose of an activity (Engeström, Engeström et al. 2003, Engeström and Sannino 2010, Gutiérrez and Vossoughi 2010) and it is in the motivations

that the object can be found (Eri 2013). This drive to be seen as more complete members of a community therefore directs us towards the object of their activity. For indicators of this motivation towards membership of the community we can look at Exhibits 12 where P1 displays the sense of being a member of the community as being important and directs it towards creating artefacts to help the new starter following them in placement and for P7 with a discussion of identity in Exhibit 40 and very clearly in Exhibit 43. It has been assumed that the object of activity for the students in the workplace AS is found in their role and the business function they participate in. For those in an accounting role they have an object of activity that is the month (or year) end accounts. For those involved in managing inventory it is in ensuring they have enough resources to meet demand. It may be that at the start of their placement the students also judged this to be the case but from the discourse of the learning logs a different object of activity emerges.

The object of activity is the motive for activity (Saninno 2008) and if the motivation has changed then so, it can be argued, has the object. The students' needs change the focus of their activity such that the motivation to belong transposes the object of activity away from the workplace role to membership of a community. The reasoning behind this change can be interpreted as *'if it is the community that is their gateway to understanding the workplace (the mediating vector for their activity) then to understand the workplace would mean being accepted by the community therefore they must become a member of that community'* - membership of the community becomes the object of their activity as well as it being a seat of mediation.

Engeström (1996) discusses 4 sub-triangles that constitute the complete AS triangle - production, consumption, exchange and distribution. Under certain conditions it is suggested that each of these sub-triangles can become a complete AS in their own right (Engeström 1987, p96). We can see here that the actions that they participate in as part of their community become an activity and in this process we can see how this is not necessarily a retrograde step but suggests the possibility of expansive learning (Engeström and Sannino 2010, Sannino 2011a) where expansive learning can be interpreted as the means by which activity is constructed out of actions due to the contradictions encountered (Engeström 1987, p213).

We can now detect evidence of the object of activity for the workplace AS becoming a mediator in the AS of *'becoming a member of the workplace community'* through a process of object transformation. This potentially challenges Prenkert (2010) who declares *"the interaction between subject and community is mediated through the mediatory elements (instruments, rules, and division of labor), but not through the object of the activity, because it is not a mediatory element"* (Prenkert 2010, p655) when seen under conditions of object transformation where a sub-triangle of an activity system becomes an activity system in its own right. In Prenkert's formulation the relationship between subject, object, community sub-triangle (the consumption sub-triangle) is direct and lacking in mediatory effect, but this would only be true if AS were considered individually and in isolation from other AS. The evidence from the learning logs suggests that the students connect membership of the

community to expertise in participation in delivery of productive outcomes (Exhibit 43, 46 and 47), the product of acting on the object of activity. It appears that the object of activity for the wider workplace AS is an artefact that may provide a contextualisation for the individual's understanding of their place in the community (amongst other mediating elements such as the DoL and rules) and therefore act to mediate – influence and direct – the relationship the subject has with their community – a manifestation of object transformation (see figure 6.2) in a complex of AS. Prenkert goes on to argue that *“according to activity systems theory, human interaction is mediated at two levels: the de-contextualized subject level and the contextualized collective level”* (Prenkert 2010, p656). What may be being exhibited here is the contextualisation of the individual providing a dialectical link between these two levels highlighted in this boundary-crossing situation – a glimpse at how an object works in its societal role (Engeström 1987, p79). Membership is understood as having the competencies that need to be displayed to produce the object of activity (Exhibits 39, 48 and 49). It is the production of the object that makes sense of being a member, it influences the behaviours being adopted to demonstrate membership of the community and provides a creative space in which to interpret what it is to be a member. Here we see traces of Parmentier's revolving roles of the triad expressed in 'Learning By Expanding' (Engeström 1987, p63).

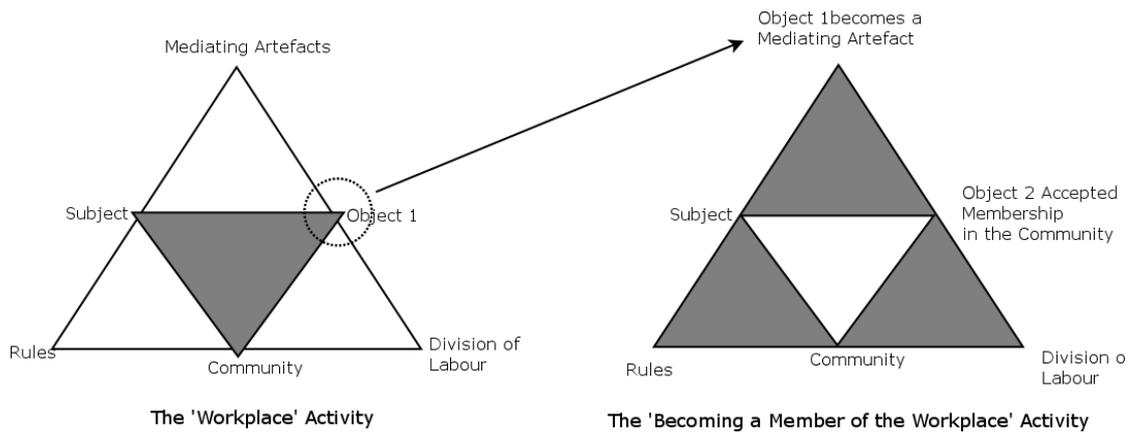


Figure 6.2: The Expansion of the Subject, Community, Object sub-triangle in to a new activity enacting object transformation where the workplace object of activity acts to mediate in the new activity.

This movement in the roles of the AS in the mediating relationship provides us with a sense of what could be called the lower edge of the ZPD. The way in which they resolved the contradiction they face between the objects of activity of two different AS where they are the shared subject demonstrates a process of unguided resolution of a contradiction. It is a non-expansive process of learning on the one hand, they are not transforming the academic object of activity, rather rejecting it, but where an apparent expansive learning process nestles on the other hand (Igira and Aanestad 2009), through a process of objective transformation (Engeström 1987, p86). As they reformulate their activity around their community and the division of labour (Engeström, Rantavuori et al. 2013) there is some argument for radical reconceptualization occurring.

6.3. Localised Interactions in the Components of Activity

6.3.1. Pyramids of Mediation

As the issue of community and membership of community is addressed and the students have a more developed sense of their place in the community and the community helps them in that process, we increasingly see contradictions in the workplace AS playing a role in the developing consciousness of the students. Interesting examples of this is shown in P11's confusion surrounding the tensions inherent in stock management (Exhibit 32) and P1's struggles in the way in which different managers from different instantiations of the same AS would interpret corporate rules (Exhibit 33). They are once more going through an objective transformation and increasingly refocusing on the object of activity for the workplace AS away from working towards membership of a community. It is not that this motivation to belong has disappeared, but that it is receding as a dominant motivation and the productive tasks in front of them are free to take centre stage echoed in discussions of identity observed in Exhibits 38, 39 and 40. It is through the contradictions the placement students face in their workplace AS that we can further explore both the students' learning and the role of activity in that learning.

There are situations where the students have worked in the same AS, but in different expressions of that AS in different branches of their organisation (different places where, ostensibly, the same thing is being done – e.g. Exhibits 33 and 29). Examples from the learning logs demonstrate objective transformation in progress, but also provide a taste of the relationships between various AS and between activity and action (Toiviainen 2007). When we look at different branches of an organisation we may expect to see the

same activity system, and this is evident in the student's contributions. What we see, however, are AS that share common components of an AS (in its graphical form), but a variation in behaviours within the AS. So how do different AS relate? Engeström (2011) discusses how secondary contradictions can arise from the adoption of new elements outside of the AS generating disturbances but also being a part of trying out new ways of working - the contradictions are a 'battle ground' - and quaternary contradictions can play out in these secondary contradictions (Eri 2013).

For CHAT there are very distinctive mechanisms for relating various AS to one another described in Engeström (1987, Figure 2.7 p103). This diagram shows how neighbouring AS provide services to one another and it is through this mechanism that AS connect. However, it is also possible that AS can relate in other ways, for example, by sharing components of the AS such as the rules. Another example of how AS connects through mediating components can be seen in the Merger and Acquisition process that participant 9 experienced. We can see how an AS (in this case consultancy) can actually be an artefact/tool in the Merger and Acquisition implementation AS.

Different branches, stores and offices in an organisation may perform the same activity for different locales and although they would on the surface share the same sets of rules, artefacts, object of activity, and position in the overall division of labour plus similar internal divisions of labour, there can be some very different behaviours on display. For the students these differences in behaviours are confusing. For P1 there was a sense that 'skewing' results is

bending the rules and not a strict adherence to the letter of the rule, but most importantly the spirit of the rules (Exhibit 33). So we have one AS diagrammatically, and yet the potential for many different sets of behaviours within different instantiations of that AS emerge in different locations.

An activity is a molar unit, that is, it is made up of multiple actions by individuals and collectives (Engeström, Rantavuori et al. 2013). These actions are goal oriented, and actions, in turn, are made up of habituated actions determined by local conditions (Bakhurst 2009). So the 'skewing' of results is an operation taking place under conditions of inter-branch competition and the desire to meet the goal of the action of meeting and going beyond commercial targets. So the AS of local branch activity, even though sharing similarities in many of the artefacts and rules can actually appear to be very different. Again we return to this issue of the role of mediating artefacts and how their role in the expression of local behaviours as driven by the internalisation/externalisation process (Bligh and Flood 2017). When we look at the variation in outcomes for students who participate in placements, even though ostensibly the same activity, the contextual differences are such that no variation would be more surprising, especially considering some of the supposed similarity in the examples from the learning logs that demonstrate huge differences in practice.

The influence of the mediators is described by Vygotsky (in Engeström 1987, p78) as an inhibitor of the direct relationship between stimulus and response. However, we can progressively see a strengthening suggestion of

multidimensional mediating relationships intervening in understanding by the individual, or the collective, alongside a 'magnitude' in their ability to mediate. What acts to attenuate the strength of a mediator are the local conditions of the specific version of the AS. Those local conditions are themselves an expression of an intrusion of other external activities, and therefore an expression of 'sets of mediating relationships'. The mediator is itself mediated. A mediating artefact is a space for creative interpretation by the individual, but the form of that interpretation and the nature of the creativity are subject to influence by other mediating factors. If we were to extend the triangle form of mediation logically, we would now be talking in terms of pyramids of mediation.

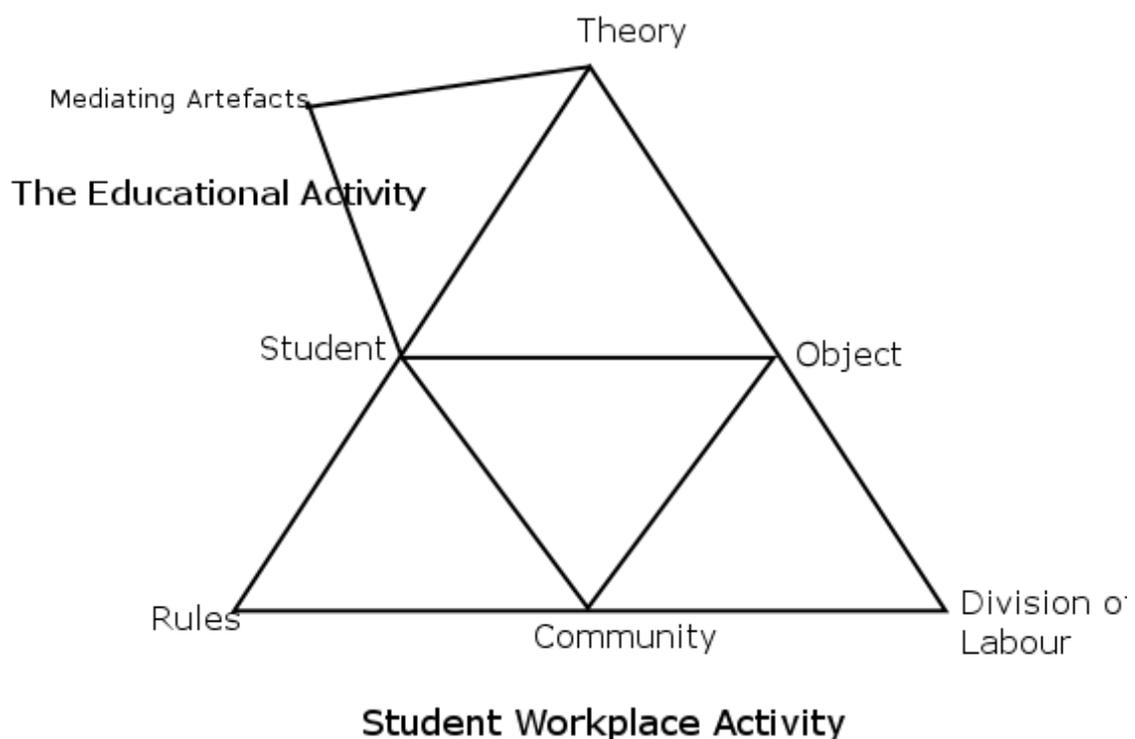


Figure 6.3: Mediation of mediation

6.3.2. Empowering Agents' Ascension

As we see the students moving into the contradictions between local instances of an AS, we can see they are once more beginning to ascend from the abstract to the concrete (Engeström, Sannino et al. 2014, Sannino, Engeström et al. 2016b, Sannino and Engeström 2017). They are beginning to note the complex interconnected nature of the AS in which they participate, and although it may be confusing, it is symptomatic of their development. Happier in their membership of a community and of their position in the division of labour they are better positioned to begin making sense of the interconnected nature of the workplace. The position they are in can be described as being at the lower edge of the ZPD (Engeström and Sannino 2010). The ZPD is a collaborative space where new ideas can begin to take shape and this ascendancy from the abstract can be realised (Morselli, Costa et al. 2014). It is the distance between individual, current understanding and a collectively generated solution to identified contradictions (Engeström 2001, Edwards 2005). To be at the lower edge of this ZPD is to be at an individualised appreciation of an interconnected whole but unable to picture a complete solution due to the isolation of an individual's creative ability.

Although contradictions can manifest themselves as conflicts, contradictions are not just conflictual experiences, they are of a developmental nature (Engeström, Kajamaa et al. 2015, Goodnough 2016). A conflict is an action centred manifestation of contradiction in an activity. It has been expressed in CHAT that contradictions are both a feature of activity and a driver for change (Engeström and Sannino 2011, Bourke and McGee 2012) and provide energy for change. It is clear that an identification of a contradiction helps see where

problems lie (Eri 2013) and for change to be enacted it is important that there is a focus for any change plans. However, it is not enough to identify something to be changed for that change to happen.

To better understand the difficulty in moving towards a process of expansive learning and the role of moving through a ZPD it is necessary to address issues of power. Expansive learning is a qualitative transformation of an activity system (Daniels 2004). Within the theoretical framework that is CHAT, to learn (expansively) is to have a radical reconceptualization of the object of activity. Radical in the sense that the new conceptualisation of the object captures a wider set of possibilities for that object than the previous conceptualisation (Engeström 2001). However, there is more to learning than this, it is not enough to reconceptualise an object, for the learning to be actual, it is necessary to implement that reconceptualization, and through the implementation change the activity itself. To move to an implementation of a reconceptualization requires the application of power. To be able to apply power in a given situation a number of factors are necessary.

It is also argued that for expansive learning there needs to be a new object that captures the possibility of change, a 'germ cell' concept arising that can be expanded upon (Engeström 2001, Virkkunen and Ahonen 2011, Engeström, Rantavuori et al. 2013, Morselli, Costa et al. 2014). The identification of this 'germ cell' is the basis for expansive learning (Engeström and Saninno 2010, Engeström 2011) as the simple relationships of the germ are built upon and concretely connected to a new reality. The germ cell has

the power of a dialectical unity (Sannino 2011b) that allows for the establishment of more complex connections. Here the role of the CL is pictured as central where it encourages a journey through the ZPD via the development of such germ cells. It is a place for experimentation and a microcosm of the larger transformative process (Engeström 2011).

We now have identification of contradiction and a future oriented vision of a new way of resolving the contradiction, a radical reconceptualization. But this is only identifying the lower and upper edge of the ZPD (Engeström and Sannino 2010). The ZPD must then be traversed and to move through the ZPD - to experience Expansive Learning as an emergence of agency (Virkkunen 2006, Haapsaari, Engeström et al. 2016, Sannino, Engeström et al. 2016b) - there must be a desire for this change, an 'agentive intentionality' (Yamazumi 2014) within what is described as the agentive layer (Engeström 2011, Sannino 2011b). This desire, though, is still being shaped and influenced by other elements of the AS and especially the contradictions in the AS - and this competition of motivation lies in the contradictory layer (Engeström 2011) surfacing as apparent irrationality and unpredictability - mainly due to a lack of appreciation of the interconnectedness of the AS.

An important element in enacting change is the issue of control. Dependent upon what is to be changed, do the participants in the AS have control over the aspect of the AS that has been identified for change? As was discussed above, not every aspect can be controlled by the AS as there may be other AS that, although not involved in the shared object of the activity (or revolve

around common objectives), they still have significant input into the way in which the AS behaves as a whole. For example a rule producing AS could provide key procedures that define how the AS operates and it is these that are blocking the successful resolution of an identified contradiction.

It could also be a part of the AS community that block changes (for some interesting examples see Engeström, Kerosuo et al. 2007). In Engeström (1999b, p394) more senior members of staff prevented an idea from a more junior member of staff from being heard and then prevent any attempt to make a change. This is addressed in CHAT as an issue of consensus and the CL appears to be a consensus building endeavour (acquiescing in conflicts in Engeström and Sannino 2011). But what if there cannot be a consensus? In the example above a new solution was identified, but this may not always be the case. Understanding the points of control beyond the manifestation of contradiction is an important part of the change process and a significant part of understanding power. Power is not just the ability to control; it is an awareness of your ability to control, and the confidence to enact that control (for the role of confidence see P6's example in Exhibit 29 of resistance to their instructions when managing different stores) (Kontinen 2004) .

These are important components in the construction of a meaningful notion of power crossing the cognitive and affective dimensions. A moment of change can be identified, a radical reconceptualization built and agreed upon, but a lack of awareness of points of control, or a lack of confidence in utilising the control the subjects may have, will prevent the ability to realize a particular

radical reconceptualization (see Exhibit 21). It is not that power is ignored by CHAT, as has been alluded to (Sannino 2010), power is distributed throughout the components of the AS. However, certain aspects of power - awareness of control, and confidence to control - are poorly developed in the current interpretation of CHAT (Young 2001). To empower is not just to let people see the problems and a way to resolve them, it must also include the means to enact a solution and this includes control (Silvonon 2004).

Analysis of the placement students' learning logs suggest a variety of mechanisms that can help explain variations in outcomes for placement students identified in the literature acting as barriers to their expansive learning. In the first instance the vector concept of mediation has been built on to include a magnitude of mediation and direction of mediation. Not all mediating components are equal and in different cultural-historical contexts what may appear on the surface to be the same AS can display very different behaviours and inner contradictions. Interactions between mediating factors act to affect the vector components of a mediator and can be internal and external to the AS. Finally, even where a radical reconceptualization occurs, manifestations of power may act to subvert the potential for expansive learning barring movement through the zone of proximal development.

6.4. Reconceptualisation and Expansive Learning Through the CL

Returning to the student's academic activity and the object of their activity we encounter these issues of radical reconceptualization, but also look at the importance of the critical encounter (P1's encounters with different managers

in Exhibit 18) (Engeström, Kajamaa et al. 2015) and issues of control. We have seen the students facing an identifiable contradiction surrounding the different objects of activity involving weak and poorly directed mediating artefacts in the academic domain. This is due to the historical and cultural development of education as the students' conceive of it. This lack of a sense of the mediating ability of the academic to make sense of the world around them leads to the rise in dominance of another mediating component, the community. This in turn lead to an object transformation from the object of activity for the workplace AS to the community and membership of the community - in effect the construction of a mediating producing AS as a means of resolving their apparent contradictions.

The radical reconceptualization that may be identified surrounding the academic object is one of reconstructing the way the students see theory. Changing it from something to be learnt for an exam into a meaningful psychological tool for making-sense of the workplace and allowing the students to operate in a professional setting (Engeström 2011). This isn't to undermine the community and all that it has to offer in terms of the sense-making process, but to remediate the academic (Virkkunen and Kuutti 2000, Edwards 2005).

What the CL has essentially driven is a reorientation of the student's conception of theory (and therefore their knowledge of theory). The point of control here is in the internalisation process in the developing consciousness of the students. It is about awareness of not just the contradiction between the

objects of activity, but a different way of perceiving the academic object in such a way that it becomes a useful mediating psychological tool (Akkerman, Bakker et al. 2012). This is a clear sign of expansive learning as the object (academic theory) is reconstructed as a more complex object for use in their activity (Engeström and Saninno 2010) a 'renegotiation of meaning' (Amory 2010, Sannino 2008). To do this is to give them a way in which they can take control of what theory means to them - to empower them (Sannino 2011b, Eri 2013).

To make the episode of expansive learning explicit it is illuminating to look at the experience of P1's journey as it emerges from the various exhibits. In the first instance Exhibit 42 displays the initial brush with the weakly mediated artefact of theory where P1 just wants to 'come to work do my day job and go home' and neglect 'the actual learning and expanding on my knowledge'. In this exhibit we can see how expansion appears to mean, not a radical reconceptualization, but something more akin to consumption further reflected in the 'thirst for knowledge' P1 expresses. Theory is not a tool to help understand the new setting but something to be accumulated. In Exhibit 16, although we see an inability to connect with her community we do see the desire for a connection to help explain the experience (here with a fellow placement student) and in Exhibits 19 and 33 we see P1 unpicking various contradictions in her professional environment leading to further confusion as a 'newcomer' and hints of cynicism towards what was being observed in the professional environment.

It is in Exhibit 18, a reflection from the Implementation phase of the CL that we glimpse signs of expansive learning. P1 now draws our attention to a change in their sense of community from that felt in the first half of the placement as opposed to the 2nd half of the placement. Due to a critical encounter with a different branch manager P1 moves from no sense of community to an impression of being aligned with the community. P1 makes use of theoretical concepts available in Communities of Practice (Wenger 2000) to make sense of this change focusing on modes of belonging especially imagination. The way in which P1 expresses their struggle with wanting to be a part of their organisations community through this theoretical concept points to a reorientation towards knowledge away from something to be consumed and expansion of knowledge being an accumulation of fact, concepts and ideas, towards something that is more about explaining and making sense of their experience. There are also small signs of consolidation of this reconceptualization through Exhibit 12 where P1 is now constructing new artefacts to help a new starter find their way in the company. P1s conscious reorientation towards theory as an artefact shows marks of increased agency and a move through the ZPD with criticism of more senior members of staff for a reluctance to explore theory (Exhibit 31) but a nuanced appreciation of theory's need for contextualising demonstrating a move from the abstract to the concrete in Exhibit 36 is further exemplified in one more excerpt from the learning log that captures this radical reconceptualization regarding theory.

My relationship with both theory and practice has evolved in the last year having had the ability to use it first hand in the real world. In university, I

viewed all theories with the same tinted glasses and believed that all were to be taken word for word and all were to be applied to each and every work situation. I have since realised that you cannot pick out the strengths and weaknesses of a theory until you put it physically into practice. P1

To do this was to create a critical encounter in which these three awareness are brought into existence (awareness of the contradiction, awareness of a new possibility, awareness of the control they have), and then unified to produce a new sense of mediation in the academic. In the literature around the CL there has been distinguished a number of different types of CL (Engeström, Virkkunen et al. 1996, Eri 2013) based upon the length of the expansive learning cycle. In (Engeström and Sannino 2010) they discuss a variety of long cycle forms of CL anywhere from 10 years to 19 years over different expansive cycles. In this respect this particular intervention is a short form of the CL taking place over a 5 month period. As an online CL it is asynchronous rather than episodic. As the students continue to reconstruct the meaning of the academic object they reconstruct it individually as a process of making personal sense (Sannino 2008) within a **collective** space. The ZPD is a space for expansive learning (Engeström and Sannino 2010), the CL acts as that space and the double stimulation the engine for moving in that space.

The double stimulation has been referred to in a variety of ways (Engeström 2011, Sannino 2015, Engeström, Kajamaa et al. 2015) but is a specific technique of producing awareness of a problem and of actively seeking a

solution to that problem (Sannino 2011a). It is a means by which outside influence can be exerted but which is meant to empower the agent in taking control of transformation (Sannino 2011b, Silvonen 2004). The double stimulation not only provides a space for interpretation, but demands of the participant a sense-making action, forcing a 'personal sense' of the object to develop (Sannino 2008) and transforming the participant and the world around them (Sannino 2011a).

The short-term character of the students' participation limits their exploration of the workplace AS. The CL is only really exposing a germ cell (Virkkunen and Ahonen 2011) and still requires much building upon outside of the online CL. Partially this consolidation is through the assessments the placement students have to do. Much of this consolidation though will take place in their final year and will be on-going throughout their professional practice. In defining success in a CL Engeström and Sannino (2010) talk of a movement from individual positions to that of the collective change agent - of changes in the tools, rules and division of labour. Yet if we only look at the students' development we miss much that has occurred in this CL and to explore its results further we need to close the hermeneutic circle.

6.5. Closing the Hermeneutic Circle

One of the choices in the methodology was to utilise Critical Hermeneutics as a part of the analytic process. Part of this was to utilise the process of rejecting the authorial intent that surrounds the construction of the text and use it to uncover hidden meaning. In part CH also provides a useful tool in

segmenting and clustering data for the purposes of analysis to uncover this hidden meaning. However, there is another key component to be considered and that is the closing of the hermeneutic circle, the bringing together of the horizons of the analysis and the analyst.

As a significant part of this research project I have been an insider in the placement process, immersed in it through the supervision of a group of placement students. I am also the researcher influencing the expansive learning process (Engeström and Saninno 2010), influencing, **and being influenced by**, the interventionist research process outlined in this thesis. It would be no surprise that my proximity to the research has a significant impact (for an extended discussion of this see Hakkarainen 2004). My impact on the research has been disclosed throughout this thesis through an honest attempt at a reflexive research methodology aimed at meeting the criteria for validity and reliability in the qualitative research context. What hasn't been examined thus far is the effect on myself as the supervisor and researcher, and I would consider this to be the closing of the hermeneutic circle.

I came into this research with certain interests and certain prejudices. I was intrigued by the transformation students went through as they passed through this placement experience, and I witnessed the struggle they often had with the academic component of the placement and how much they simply saw it as a burden to be shouldered. This attitude saddened me. As a keen educator I felt that the exploration of theory in a practical environment should be an engaging and interesting endeavour (Hakkarainen 2004). My prejudice lie in

the fact that I felt this would be the fault of the organisation and especially the influence of the community that the students were embedded in for their professional practice. The contradiction I identified in my own AS was between my motivation towards the academic object of activity and that of the students and their professional community. For me theory is an important tool, for the students and their community I believed they saw theory as a waste of time and that experience is everything. I was wrong.

From this analysis I now recognise that there is a much more complex set of phenomena at work (Amory 2010, Engeström 2011). The interplay between the training that comprises the educational experience for a decade and a half destroys the potential mediating impact of academic theory. This misdirected psychological tool cannot play a meaningful role in the sense-making process because for the students it has never actually performed this role in their eyes. It is indicated that even in HE we are not successful at breaking these early habits formed in education.

Even though certain members of their professional community may be resistant to theory that doesn't necessarily translate directly into student attitudes, mediation is a much more complex process than that (Engeström 2011, Archer 2013). There are competing views on theory even in the workplace and there is resistance to simple acceptance of a given perspective by the students. What has become clearer to me is the importance of empowering students to feel more able to challenge theory, to not simply tell us what others think - to 'know' the content - but to say what they think of what

others are articulating and in a systematic fashion detail their considerations. To provide a dialogue where they feel safe to express their own sense-making process and through a more public revealing of the meaning they are constructing find a collaborative route to seeking an orientation to the knowledge we put before them. Expansive learning is not just about changes in individual behaviour but should be seen as transformation in all aspects of an AS (Engeström and Saninno 2010) and as suggested, this CL and expansive learning cycle has led to me questioning my own practice and the 'situatedness' of my own practice (Miettinen 2004).

6.6. Conclusion

This chapter has shown that by analysing the learning logs of placement students we can better understand the variation in outcomes we see in students as a product of the placement experience through the lens of CHAT. It has shown that the CHAT concept of mediation is more than a binary scalar phenomenon and is better understood by extending the vector concept to include a magnitude and direction to mediation. We can then see from student conceptions of education that management theory is a weak mediating artefact that has been misdirected towards a process of recall through a focus on examination and away from an explanatory (mediating) tool. This inhibited mediating role for management theory acts to intensify the confusion and stress the students feel in entering a new, professional, working environment full of new social practices that they have rarely encountered. Under these conditions the object of activity for the academic AS becomes a meaningless

distraction from the real job encapsulated in the workplace AS. The key barriers to students using management theory in their concrete practice are:

- Their conception of education and management theory.
- The newness of the boundary-crossing scenario they find themselves in.
- Their workloads.

To resolve this conflict between the academic and the workplace the students reconceptualise their object activity away from the workplace AS object activity towards membership of a community through a process of object transformation. This can be characterised as the lower edge of the ZPD where the students are acting in an individual capacity.

By analysing the placement students' experience of the workplace AS we can see through the contradictions they identify in their learning logs, that mediating components in the AS are in turn mediated by internal and external factors. It is this mediation that leads to mediating artefacts having a vector like appearance. By understanding this process of double mediation and the vector effect it has on mediating artefacts we can now explain the placement student experience and illuminate the mechanisms for variations in outcome from placements.

The online CL of this project and the collective space it provided helped the students reconceptualise the academic object of activity and remediate

management theory as an artefact. This was an identification of an upper edge of the ZPD, but there remained issues of power that may prevent traversing the ZPD and fully implementing any reconceptualisation. The online CL provides some reconceptualization but it is limited and could be subject to reversal. It proved to be the case that it was not only the placement students who were changed by the process of this CL but I too, as researcher and supervisor, was also forced to face my own preconceptions and the conflicts that arose.

Chapter 7. Conclusion

This study has examined the placement experience of 12 students working in a variety of private organisations spread throughout the UK. It has used the CL methodology to examine the students' relationship to theory and practice and how the CL can impact on this relationship. CHAT as a framework has been used as a theoretical lens to make sense of the students' experience whilst out on placement.

This chapter will explore the various ideas, issues and considerations that arose from this research starting by highlighting the contributions to knowledge it has made. It will explore the primary and supplementary research questions to see how the findings have contributed to our understanding of the placement context, specifically the placement context of students studying business related subjects and taking a year long placement in the 3rd year of their university studies before the final year of an undergraduate degree. It will then state the theoretical contributions to knowledge made regarding mediation within CHAT and mediating relationships. Finally it will state the methodological contribution to knowledge regarding the Online CL. This will be followed by an exploration of the strengths and limitations of the study and the implications for further research. Finally there will be a reflection on the quality of the research in this study and the ethical considerations.

7.1. Contributions

7.1.1. The placement context

The focus for the study was on the work placement portion of an undergraduate degree. It is in this aspect of the research where we must start when examining the contributions to knowledge that the study has made.

Through supplementary research questions we can see the contribution this has provided for the specifics of the placement context for this study – and also answer the primary research question.

Q1: To what extent do the concepts of CHAT and the AS explain the students' practice settings and transformations in practice?

By extending the idea of mediation, CHAT has proven very able to provide explanations for the students' practice settings and their transformations. It has shown how the weakly mediating nature of education lead to object transformation focusing student activity on their membership of the workplace community. It further showed how dilemmas and conflicts in their workplace practice generated a sense of overwhelming complexity driving them to seek security in being seen as competent members of their community.

Q2: What are the barriers to students conceiving management theory as concretely relevant to their local practice settings?

The main barrier to students using the theory they have been learning appear to be their comprehension of education and the manner in which education

trains them to be exam machines. The focus on recall and exams that features in the students' responses alongside their criticisms that education doesn't prepare them for the workplace suggests a particular view of education. That it is just a series of examinations that must be passed to move on to the next stage of life. This conception of education and the outputs of academia in the form of management theory as simply a source of material for tests disconnected to the world of concrete practices prevent them from seeing theory as an instrumental tool – something to guide concrete action. To remove this barrier is to challenge this way of seeing management theory and move education beyond a series of exams to be passed.

Q3: To what extent can changes in participants' orientation to theory be discerned as attributable to the participants' work within the research-intervention?

The students themselves have attributed their change to the reflective process in the learning logs, the form of which was driven by the research intervention. The configuration of the activity sheets that guided and enabled the reflective logs was produced through the constructs of the CL methodology and therefore a significant contribution of any reorientation to the disciplinary knowledge can be attributed to the CL and the participants' involvement in the research-intervention.

So, returning to the primary RQ - *'How can a Change Laboratory research-intervention support a group of placement students to take abstract concepts*

of management theory and embed them concretely into their work practices?'

- the CL research-intervention provided a structure through which the students were forced to confront the contradictions that faced them in the placement context and help them reorient their position towards knowledge of management theory so that they could make use of it. It generated an ontological change in the students' conceptions of management theory away from something to be memorised for exams towards something more of a tool for intervention adapted through the concrete experiences of their individual circumstances.

In terms of the work placement literature this exploratory CL provides a narrative for the students' experience that is often missing. This narrative is systemic in approach and provides structural insights to better enable targeted interventions rather than speculative tools such as learning contracts (Fowler and Tietze 1996). The misdirection of theory due to student conceptions of education that are articulated in this study is embedded in a contradiction between the exchange value and use value of education. This locates theory as a weak mediator in student understanding of the workplace. In its place the students pursue membership within their community to help provide some comprehension of what is occurring alongside greater security in a complex, ambiguous and unsettling social setting adding to such weakly formed concepts of conflict (Williams and Marsh 1972), relationships (Fowler and Tietze 1996) and the social aspects of work (van Zwanenberg 1985) that can be detected in the literature on work placements. This interpretation via the framework of CHAT injects a set of well-defined terms and concepts that

explain the mechanisms in play for the students participating in a work placement to add to other strongly theorised works (Eames and Bell 2005, Clarke and Zukas 2014, Davies and Sandiford 2014). This can be compared against the taxonomies of broad concepts evident in other parts of the literature (Reddy and Hill 2002) that provide no such conceptualisation beyond categories of possible outcome.

By having a structural explanation for the student experience, educators involved in the placement practice of students have a set of constructs that reveal a moment around which an assessment based intervention can be centred (Huntington, Stephen et al. 1999 and Reddy and Hill 2002). By using a specific form of assessment the students are forced to participate in a process of reflection on theory in practice that encourages the remediation of theory as a useful tool, not just in understanding their situation, but also in enabling active engagement and an important level of agency in their professional situation. It may be the case that it is this kind of agency that underpins a sense of self-confidence and maturity described in the literature (Stephen, Jones et al, 1997, Mansfield 2011), but further research will be required to make such a connection. The value produced by the CL in this study - and therefore the value of the placement - is better established than is often witnessed in the existing placement literature (e.g. Kiely and Ruhnke 1998) especially when considering student development and theoretical understanding.

7.1.2. Notions of Mediation

To be able to more completely explain the practice settings of the students it was necessary to expand on the idea of mediation by adding to the vague idea of mediation as a vector something more specific relating to the notion of a vector. In *Learning by Expanding* Engeström (1987) uses the idea of the vector as a route of transmission to communicate the sense of the influence that mediating artefacts encompass. Mathematically speaking, a vector is an entity that contains both magnitude and direction. By extending this idea of vector to mediation we can now appreciate how management theory came to lack, or even lose, an ability to mediate in the students' workplace activities. Management theory directed through education as an artefact towards recall in exams becomes misdirected and for the students loses the power to mediate in the practice – it is a weak mediator, its influence easily overshadowed by other mediators.

If a mediating artefact can vary in its ability to mediate then there should be a mechanism for this variation in magnitude or direction. By further expanding mediation to include mediation of not just 'a direct relationship', but also of mediated relationships, we can conceive of a mechanism that can either attenuate mediation, or change its direction. So, the students' focus on passing exams derived from their experience of education has acted to influence the students' use of management theory directing it towards exams rather than an instrumental tool to influence action and activity. These two ideas, of 'vectors of mediation' (with the dichotomous weak/strong mediators) and 'mediation of mediation' are theoretical contributions to the development

of CHAT. This contribution lies within the multi-voiced principle of CHAT showing how well the different voices are heard.

From this we can add to the discussion about the definition of consciousness as it relates to CHAT. Activity is seen as fundamental to consciousness but often the question of 'what is consciousness?' isn't fully defined.

Consciousness is the justifications for a subject's action, the underlying reasoning behind actions. The process of understanding by the subject tightly bound up in the process of internalisation/externalisation moving between settled and modification. It could be said to be an individual's configuration of Vygotskian psychological tools produced through mediation and that lead to instrumental acts. Consciousness is the seat of agency where the conceptions of the subject, shaped by mediating components in the AS, mould the actions of the subject that further shape the mediating components of the AS. It may be the case that certain forms of genius lie not in the uniqueness of the individual but in the uniqueness of their activity – and in the mediations intersecting at a given moment in an activity that unfolded in the history of that activity and in the individual's history of activity.

7.1.3. Too much triangle too little triad: a flawed trinity.

There are 3 constituent triangles to the larger AS triangle as described by CHAT (Engeström, Sannino 2011). They are: Production (subject, artefact, object) Exchange (subject, rules, community) Distribution (object, community, division of labour) Consumption (subject, object, community). Outside of the CHAT origin story there is little discussion of these sub-triangles. There is also

little discussion beyond the origin story for the specific labels that have been assigned beyond a link to the Marxist roots of CHAT.

It is through empirical examination that labels and classifications can develop greater meaning. In this study we have seen how, through object transformation the students have moved from an AS with a distinct object of activity relating to the production sub-triangle to an object of activity relating to the consumption sub-triangle. This object transformation is a reflection of a change in motivations surrounding objects of activity away from a motivation towards part of the productive process for an organisation, towards a motivation towards becoming a full member of the community where this membership is mediated by the nature of the object of the part of production they are involved in. The identification of a mediating role for an object of activity is an addition to CHAT as a theoretical perspective. Furthermore, the students are seeking to display competence in their community, this is done by understanding your role in the division of labour, so now we have another sub triangle important in this study, that of subject, community and the division of labour - there is no label for this sub-triangle. Competence is also displayed through the 'subject, community and artefacts', and the 'subject, community and rules' sub-triangles - again, sub-triangles without labels.

The compunction to enforce the aesthetic of the triangle in CHAT through the AS (Prenkert 2010) and beyond obscures the extra triadic relationships that exist within the AS and the tendency to label certain sub-triangles provides an emphasis on those at the expense of other relationships further obscuring the

possibility of a full and complete analysis. Sannino (2011a) describes this as a limitation in the use of the triangle rather than in anything intrinsic in the diagram but surely if there are 'misinterpretations' then we should ask if the adherence to a particular graphical form may actually lay at the heart of this and if it would not be better to move away from that graphical form if it acts to encourage such misinterpretations.

7.1.4. The Online CL

The key contributions here are regarding the exploratory use of an online environment to structure a CL. The typical CL is a very physical phenomenon taking place in a physical space and with all participants present (although participants may differ from session to session). The Online CL has proven to be a powerful tool in a situation where the targets for the CL have a wide geographical spread providing an environment where a number of individuals can collaborate towards a common goal. Rather than having to bring a group of individuals together in one place with all of the problems surrounding attendance, issues such as travel times leading to extended periods away from their production environments and cost related issues relating to this travel. This study has shown the possibility that an online approach to CL can be a very cost effective means of implementing a CL and it would be interesting to see how this works over a longer period of intervention.

7.2. Strengths

A significant issue that required addressing in this research was how the participants were spread across a wide geography. Although they were all

based in the UK they were placed in a large number of locations across England. It would have been very difficult to bring this number of individuals together on a regular basis over an extended period. The employers of the placement students, it was assumed, were unlikely to have agreed to their staff being away from work for such a length of time. If students were required to use their own time then there was a likelihood that they wouldn't have been willing to participate at all (especially considering the attitudes the students initially displayed towards academic activities) and this would have seriously weakened any attempt at a CL in this situation. It would have been necessary to change a number of parameters of the research such as seeking to find participants all in the same organisation, or at least the same city, or include different actors from the organisations. That would have been different pieces of research, and although not necessarily better or worse, the use of an online element of CL enabled this particular configuration.

By using modern technologies the CL space for commentary was always there - it was a place that the students could move in and out of at their own pace. By the dint of having access to an electronic device - a computer or a phone - and access to the Internet they could enter the CL at anytime. The CL was never closed or over, in one sense there wasn't multiple sessions, just one long one. This allowed for greater flexibility for the participants allowing them to engage as and when they wanted to (or were able to). With some of the participants I would enter into conversations in real time. With others conversations may take place over days or weeks. This allowed for both situations where the participants were able to take time to reflect on their

responses - or pursue any ideas that excited them at the time they wanted to. This is a distinct advantage over the traditional CL where the ability for a participant to voice their thoughts at the point that they felt appropriate rather than waiting for a specific CL session may prove to be more empowering.

7.3. Limitations

One of the main weaknesses came out of the poor interaction between the participants. They all at some point engaged in interaction with me as I queried their reflections and any responses they made to my queries. Only one of the students actually attempted to engage with another of the students but received no reply. I can only assume that the lack of response in this situation was a barrier to any further attempts at interaction by this individual. When discussing this with the students outside of the research context they felt that they didn't know each other well enough to comment on each other's entries. They had been looking at what each was writing - so there was some collaborative element to the CL, but it wasn't the high level of interaction that would be expected in a more traditional CL. There may also have been some impact due to the organisation of Slack into separate channels for each of the participants leading to a swim lane effect where students perceived a barrier to posting in each other's channel. This may have been reduced if each task had been a channel so that the participants would have been posting together reducing the barrier due to cross channel communication and making interaction more natural.

One further limitation links to the number of different organisations and organisational roles/departments involved in the research and therefore the number of concrete AS that could be constructed. Only two of the students were in the same organisation and they were in different departments although co-located. This means that many different organisational histories, development paths, and cultures were being expressed through the CL and the potential for complexity to go misrepresented or misidentified.

The fact of the dual requirements on the CL, one set regarding the research and one set regarding the academic assessment needs of the placement means that the CL sessions were more rigid than would be expected in a more traditional CL. The assessment element of the CL also shaped the response of the participants. However, although limiting, the nature of these limitations are not unusual. Many aspects of a CL can shape the response of its participants including the specific individuals involved in the CL. For example, are junior members of staff not likely to attenuate their comments in the presence of a supervisor - or may be even the reverse if they sense that the CL is a safe place to make their frustrations known.

This was the first CL that I have conducted and therefore it was inevitable that mistakes could be made in this learning experience for me the researcher. My understanding of the theoretical underpinning of the CL was developing alongside my practice of the CL itself and some of the practices employed (e.g. the activity sheets) were not as adaptive as I would have liked. In fact this aspect of the research echoes the very theoretical basis for it as a project.

It was through activity and externalising my understanding of the abstractions of CHAT/CL contained in the literature through the concrete realisation of the online CL in this study that I better understood certain concepts and aspects of the approach. This shows how internalisation/externalisation isn't unidirectional, isn't a moment in time, but is a dialectical process moving continuously and fluidly to form individual 'consciousnesses' (my own and the students).

7.4. Implications

7.4.1. Implications for Practice

The implications for practice surrounding placements for students are primarily aimed at the business school community where this research is situated.

However, other disciplines may find the results in this thesis to be of interest and may provide pointers to their own practice or areas for further investigation. Educators must be very aware of their students' orientation to the disciplinary knowledge. Do they recognise the links to practice that may be present or simply perceive points for recall as was detected in this study. This understanding may help to inform the focus of the placement. Is the placement a space in which they simply apply and improve basic technical capabilities, or is it a place to test and refine theoretical constructs? In either case the students need to be able to feel that they are free to express their feelings, both positive and negative, so that an academic supervisor can engage with these to help the student come to some form of resolution if possible - at least find a position that provides some comfort in their struggles. In this last point we should be comfortable with their discomfort and not seek

to provide a simple framework that provides an illusion of certainty when the reality of the working environment is one of ambiguity. An ability to express their discomfort is an important precursor to examining the roots of that discomfort and the route to resolution. That the boundary-crossing nature of the placement is a latent ZPD full of potential for expansive learning provides a useful opportunity to be exploited through developing the students critically reflective capacity to explore the theory/practice dichotomy.

For the practitioner of Change Laboratories interested in the application of online methods to their processes, it should be noted that this experimental online CL did not appear to fully support all of the Expansive Learning Actions as would have been hoped. The CL as described allowed the participants to move through the Questioning, Examining and Modelling phases at multiple points in the CL. However, the actions of Process Reflection, Implementation, and Consolidation were less well developed. Although it could be argued that the whole of the process the students went through in the CL was of a highly reflective character, the space to reflect back on the process was minimal (a single task) and provided limited data on how the participants perceived the process of expansive learning they had moved through. With Implementation and Consolidation, even though there were more tasks dedicated to these actions, it would be mistaken to state that the process was completed in this CL. It would be necessary to look beyond the boundary of this CL to appreciate whether the change in orientation the students were demonstrating lasted outside of the CL. To obtain a full picture would necessitate an extension of the CL into the first year of professional practice for the

participants after their degree programme has been completed to examine whether they continue to utilise the theoretical constructs they have studied to shape their concrete practices or whether the return to the educational environment and the lure of familiar practices lead to a reverse of that glimpse of Expansive Learning that we witnessed in this project. It may be the case that such a short form CL can never implement a full set of Expansive Learning Actions.

7.4.2. Implications for future research

There are a number of areas that can be considered the development of further research from the findings in this study. These relate to CHAT, the CL and for research around placements in general. This study has opened up the notion of mediation further and requires more empirical work to elaborate both the ideas of 'mediating vectors' and 'mediation of mediation'. Although there were a few examples of how mediating artefacts could be in turn mediated by other factors there is still the need for more empirical work to be done to test and strengthen this idea. Specifically, more comparatives between AS that have the same structures and components but display different outcomes similar to the students' experiences between different branches or stores of the same company may help in progressing these concepts. This kind of work would provide more insight into the process of internalisation/externalisation and provide a more nuanced appreciation of this link between the societal and the individual that is central to the dynamics of CHAT.

Prenkert (2010) argued that there were AS components that were core, and the others were mediating. This study argues that all AS components are mediators and that to identify certain AS components outside of this part of the triadic relationship may be a mistake generated by a fixation on the triangular form that grew out of the early exposition of expansive learning (Engeström 1987). Furthermore, the theoretical obfuscation created by the triangle may mean that other relationships that may be detected in the triangle could be ignored as part of an analysis missing out critical interactions in the AS and ultimately leading to poor expansive learning outcomes and limited possibility of radical reconceptualisation. It may prove useful to either reject the triangle as a nothing more than a useful fallacy to show classifications of components within the AS or may need to be supplemented by other techniques to ensure all aspects of an AS are explored as part of a CL.

An example of this is an exploration of power within the AS and how these relationships lead to the realisation of power. Criticisms of power are nothing new to CHAT and have even come from within the tradition (as I perceive this to be). In this it has been noted how mediation is a complex phenomenon and that theoretical obfuscation has helped mask this complexity. By uncovering specific triadic relationships that have been ignored and by applying the concepts of magnitudes of mediation and mediation of mediation, power as a specific phenomenon may be better situated in the AS and become a focus for the implementation and consolidation phases of the CL expansive cycle.

For the form of CL pursued here there is a need to develop certain aspects of it. Virkkunen and Newnham (2013, p62) discuss the importance of the setup phase of the CL and elements of this were missing from the online CL. Anecdotally the students appeared shy in commenting on each other's postings due to the lack of connection prior to the CL commencing. Embedding this early meeting and getting to know one another would appear an important development for future online CLs. This particular CL also was of a very short form, and although having some success the ability to further consolidate was limited. Extending the CL before and after the placement period may provide better outcomes overall. It would also be useful to further examine the role of various techniques in the double stimulation in an online CL and how the 'fuzzier' boundaries to sessions impacts on what is a primary stimulation and what is the double stimulation and how they may relate to one another. The role of mirror materials and the ease of use of multi-media artefacts as mirror materials is also an interesting area for further research.

With regard to research on placements this study shows the complexity that underlies many of the studies that have been to examine the outcomes of work placements on student academic achievement, employability and beyond. More still needs to be done to understand the role of the discipline, the role of the academic supervisor and the many interactions that occurred. This study focused on the internalisation process for the student and how their relationship to theory developed - but what about their role in externalisation and how they affected their organisation. Study of placements is in its early stages with many more areas still to be examined.

7.5. Final Reflections

7.5.1. On Quality

The study was conducted with students studying in a business school based in a specific institution within the Russell Group of universities that has a very particular demographic profile. Although the participants were chosen to reflect this demographic profile they were each in a setting very particular to the individual and not necessarily reflecting the circumstances of placement students beyond their discipline, or even beyond their own particularities. The findings therefore cannot be generalised in a straightforward manner. We must be careful not to assume, for example, that in all disciplines the students on placements perceive little use of their educational outcomes in their job role. It may be that the student nurse sees wide applicability of their academic achievements in their specific placement settings. However, generalisability is not necessarily the main aim of a qualitative study. It has been argued that it is a part of a wider scientific endeavour to gain a deeper and richer understanding of society and the contextual impact of different settings.

This qualitative research has involved, as do many qualitative studies, the researcher in an intense sustained relationship with the participants. The key to high quality research in a qualitative sense is through the development of trust in the researcher, and the research approach chosen. At the heart of this is the idea of the inquiry audit where the means of data collection, data segmentation, clustering and interpretation are made transparent. Here these components of the study have been exposed to the research community (and

beyond) for the purposes of scrutiny. The reasoning at each step, and the manner in which the researcher subjectivity has impacted has been laid bare. Through the use of CH the subjectivity of the researcher is built into the method as a component of the interpretation process and its inclusion is key component in 'closing the hermeneutic circle'. My biases and the role of my history in choices regarding the area for research and the methods for research have been made clear. In fact it is these subjective considerations that drove the decision to use CHAT as the study methodology and which then drove the research question, rather than the research question driving the methodology. In part this was a theory testing/development project.

I was more than just an observer of the CL sessions and an active participant in the process of the CL sessions driving conversations with the students in response to their reflections in the learning logs. Both CHAT and CH utilise this closeness of the researcher and, for CH, change to the researcher themselves is a possibility. My impact has been taken into account in the analysis and the impact the research has made on my subjectivity highlighted for scrutiny.

There could be considered some issues regarding the sporadic nature of the student participation where they didn't treat the CL sessions in a weekly fashion as intended, but engaged in a very sporadic manner. This however, is just an artefact of the research and was considered in the analysis itself demonstrating an aspect of student intentionality surrounding the academic work.

7.5.2. On Ethics

The issue of ethics in research is of great importance and plays a key role in underpinning the quality of research. This research was conducted inline with the ethical procedures of the University of Lancaster and permission to use the target institution as the place for the research was obtained before the research commenced. Anonymity and informed consent were a critical part of this ethics clearance and at two points before the data collection began the participants permission was actively sought and then confirmed. At the second point 3 of the participants decided to withdraw from the research leaving the 12 whose data was used to develop the findings in this thesis.

Reflecting on the issue of insider/outsider research it is difficult to see how in CL the researcher cannot have closeness to the research project and the participants (Sutter 2011). To be able to have any form of flexibility in terms of the discussion within the CL then a certain amount of familiarity is required. To extract the researcher from the research and marginalise their involvement is to cheat the process of research as understood by CHAT (Collins, McCrory et al. 2015). Even though the CL is depicted as a research-intervention and the researcher can be interpreted as an agitator - they are not an outside agitator. They have a very specific role within the CL and will be impacted as much as any other participant by the CL. To stand outside of that is to actually be removed from the collective as a learning system and would appear to stand against the theoretical tradition that is CHAT. CH with its inclusion of the analyst's horizon as part of the analytic process played an important role in maintaining my awareness of this situation. To make clear my early

assumptions and then reflect back on the changes that have been instigated in me provides the reader with further sight of the research process as whole and better able to form a position on the quality of the research.

By embedding the CL in the students' academic assessment, a necessary requirement for placement provision as an integral part of a programme, the need for extra work was eliminated. This meant the impact on the research participants was reduced effectively to zero ensuring no unnecessary stresses on the participants due to the workload attributable to the research. In fact the research may play a role in reducing the stress of the academic component of the placement by aiding in remediating theory in understanding their situation and providing a space in which they can adapt theory for use in their concrete settings.

7.6. Conclusion

This piece of research is an example of the key part of the internalisation/externalisation process set out as central to CHAT and expansive learning. By engaging in this specific research, I had been through an internalising process regarding my observations of the placement experience and my own experiences moving between education and professional practice as educator and educated. Engaging in the academic literature was absorbing the collective externalisation by the academy of placement experiences and the CHAT theoretical tradition. Building the concrete specifics of the study was to go through the internalisation of the collective experience in the literature and to externalise that understanding.

My externalisation of my understanding through the CL came to impact on the internalisation process of the student participants whilst out on placement.

Their responses to the CL in their learning logs was the externalisation of their internalisation process and fed into my internalisation process of subjective interpretation of the qualitative research process, a cycle completed in the externalisation represented by this thesis.

Our individual need to survive in a physical world requires that we produce objects that meet our need for survival. Collective production is a particular evolutionary response to that physical need to survive and in becoming collective further requirements for survival are forced onto the individual - the need to belong. To belong as an individual is to internalise the societal - not just learn to mimic the actions of others but to echo the reasoning behind those actions - to join in collective systems of values and beliefs. That can only be done if collective and public meaning is externalised through the many artefacts of the community. However, the many imperfections of the internalisation/externalisation process due to the many and varied mediating relationships (such as those discussed in this thesis) lead to more than just reproduction of society - as Engeström discusses the learning paradox in *Learning By Expanding* (1987) - it leads to the possibility that a structure can give birth to another structure of even greater complexity.

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Appendix A – Example Activity Sheet for Students' Learning Log

Learning Log Activity Sheet.

Week 1: Reflections on education and work

Aim

To begin to think historically about your learning journey to this point so that you can consider the role of education/theory in preparing you for the workplace.

Objective

Reflect on what you think is the purpose of the academic work you are doing at whilst on placement and situate it in the educational process you have been on to date. You are trying to find a line of development from school to college to university to work. If this line of development doesn't exist in your opinion where is it breaking down and why do you think that is?

Guidance.

1. Use the resources identified below to aid with reflection.
2. Utilise the Saunders Paper as a primary tool for this reflection especially the sections on functionalism and liberal theories of

education (you will note they have a commentary from me - but you can also suggest your own interpretations). This paper comprises a discussion of the 'sociology of education' examining a variety of narratives aimed at explaining the role of education in society.

3. Listen to the audio clips of student nurses discussing their feelings about the learning required whilst on placement. There is a spread of opinions expressed in these two clips that may help you think about your own position.
4. When reflecting on the role of education think carefully about one or two incidents from your recent educational experience (whilst at university) and your experience in the workplace that exemplify the points you are trying to make.
5. Take your time through the week thinking about the incident(s) and how it/they exemplify/contradict those components of the reading that you are focusing on.
6. At the end of the week write up your thinking from the week.

Remember this is about what you think, not what you think we want you to write. Give yourself plenty of time to consider what you want to write before taking up the keyboard. If you do this the writing phase should be fairly short. This should comprise of:

- a. A short statement about what the incident is you are reflecting on such that a reader would be clear about the context of your reflection. For example, the incident could be a specific classroom situation, a conversation with a lecturer, or an interaction with fellow students.

- b. Using the Saunders paper discuss how you think education is helping (or not helping) you to develop as a professional. Make sure you develop the 'why' of your thinking using the incident described above and other appropriate examples from your experience in the workplace. Remember, this is only a 500-word entry so choose what you wish to discuss carefully.
 - c. Include aspects of personal reflection examining how you feel about the conclusions of your thinking for the week.
7. Once you have completed your own learning log entry take a look at the entries of others and comment as appropriate. The aim here will be to develop a dialogue on the role of education in learning for the workplace.

Resources

Saunders, M., (2006) From 'organisms' to 'boundaries': the uneven development of theory narratives in education, learning and work connections, *Journal of Education and Work*, 19:1, 1-27

[Play list of nursing student clips.](#)

To access these clips you will need to sign up to '[BoB: Learning on Screen](#)' a video service that the university subscribes to, so you as a student can use it. It will require a e-mail verification process the first time you sign in and register. You will simply need to choose our institution ('University of

Liverpool') and then sign in using your university login details. Once you have done this you will be able to access the clips by clicking on the link above.

BoB is Learning on Screen's on demand TV and radio service for education. Our academically-focused system allows staff and students at subscribing institutions to record programmes from over 65 free-to-air channels, and search our extensive archive.

You will note that BoB has extensive utility as a video viewing utility beyond the clips I have provided and I hope you have fun investigating it.