

LEARNING IN COMPLEX ADAPTIVE ORGANISATIONS

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ABSTRACT

The globalised economy is characterised by constant change and an increased imperative to work across networks within and between organisations (Drucker, 1988; Sargut & McGrath, 2011). In this context, where change is regarded as continuous, the ability to learn and adapt is critical (Hislop, Bosley, Coombs, & Holland, 2014). This paper takes up complexity, specifically complex adaptive systems, in order to investigate individual experiences of learning at work in this environment.

Complexity is increasingly being used to frame studies of organisations and organisational learning (Desai, 2010; Fenwick, 2012a; Stacey, 2003). In this paper, I outline complex adaptive organisations as interconnected networks of individuals and communities that adapt through the actors' interactions within and outside of the organisation. Describing organisations in this way provides greater opportunities to look at learning as both part of a system and an activity of individuals which is shaped by that system.

This paper reports selected findings from a study designed to investigate the experience of learning within complex adaptive organisations. Semi-structured interviews were conducted with 14 participants who worked as executives, senior managers, managers, professionals and administration staff. The participants represented nine publically listed, not-for-profit, and government organisations across a wide variety of industry sectors in Australia. A phenomenographic analysis of the transcripts produced four categories of description which describe learning as being experienced along a continuum of structured learning/learning through work which is influenced by the degree of fluidity and complexity in the work tasks. This is contrasted with a cultural and practical organisational emphasis on structured learning, which often appears to miss the mark in terms of the real-time learning needs of the actors.

These descriptions of individual experiences of learning within complex adaptive organisations offer insights into learning within twenty-first century organisations and provide a framework for understanding this by applying a complex adaptive systems lens. This study offers insights into what individuals and organisations are doing, or not doing, to adapt their learning practices.

INTRODUCTION

This paper reports findings from a study investigating the experience of learning within organisations conceptualised as complex adaptive systems - referred to here as complex adaptive organisations. Increasing pressures from the forces of

technology and globalisation, and government responses to these, mean that change is now acknowledged as a constant feature of organisational life (Hislop et al., 2014). Furthermore, large-scale changes in the composition of the global economy and increased competition for roles have created an imperative to maintain employability and stay abreast of the latest skills and knowledge in a field throughout one's career (Billett & Choy, 2013). An interest in how organisations and individuals need to adapt their respective learning practices to deal with these new dynamics has led to this investigation of how individuals experience learning within organisations. An approach that is increasingly being used to frame studies of organisations and organisational learning is complexity (Desai, 2010; Fenwick, 2012a; Stacey, 2003) of which a sub-set, complex adaptive systems theory, is applied here.

While the study is framed by a systems approach, the objective of this study is to look at the experience of workplace learning from an individual level as part of the broader system. The broader study also considers the impact of this on individual and organisational learning practices. and aims to answer the following research questions:

1. How do individual actors experience learning within complex adaptive organisations?
 - How do professionals learn within complex adaptive organisations?
 - What is the impact of organisational and work task complexity on individual and organisational learning practices?
2. How can workplace learning practitioners embed and support learning in complex adaptive organisations?

This paper focuses on selected findings from the broader study which provide answers to the first research question. In particular, the four categories of description which emerged from the phenomenographic analysis are discussed. A consequence of the focus on individual experiences is the selection of phenomenography as the methodological toolkit best suited to the task. Adopting a phenomenographic approach aims to provide insight into the variation of experiences of learning for individual professionals in the organisations studied. The analysis is based on transcripts from semi-structured interviews conducted with 14 individual professionals representing nine organisations from different industry sectors in Australia. This included publically listed corporate, not-for-profit and government organisations where the participants worked as executives, senior managers, managers, professional and administration staff. This analysis highlighted how learning is experienced within complex adaptive organisations as being very much "on-the-job" yet also in conflict with structured organisational learning practices.

This paper adds to the emerging field of workplace learning (Fenwick, 2006) through a study of the workplace learning experiences of a variety of individual professionals representing a wide variety of industry sectors. In particular, this study contributes to the growing body of learning research that adopts a complexity approach (Fenwick, Edwards, & Sawchuk, 2011; Hager, 2011), of which complex adaptive systems are a specific subset. This more targeted concept highlights the importance of adaptation and learning within such systems. Specifically, this study uses a complex adaptive

systems approach to foreground the learning experiences of individual actors in order to provide insights into how professionals are adapting to the changing needs of their work contexts and how this impacts individual and organisational learning practices.

The key terms used are defined first, followed by a brief overview of the relevant literature. This is followed by a discussion of the phenomenographic methodology before discussing the categories of description that emerged in the findings.

DEFINING KEY TERMS

Complex Adaptive Organisations

A complex system is one where there is a network of components with little or no central control and simple operational rules which bring about complex collective behaviours (Mitchell, 2009). When a complex system contains agents that seek to adapt, these are called complex adaptive systems (Axelrod & Cohen, 1999). Complex adaptive systems contain agents that respond to external and internal inputs by adapting, forming and changing their strategies for working within the system (Holland, 1995; Waldrop, 1992). It is the adaptive nature of these systems that is of particular interest here and the concept of complex adaptive organisations is used as the term which frames the study and differentiates these organisations from other complex adaptive system examples found in nature (e.g. flocks of birds, computer networks, etc.).

Although it is common to refer to the elements of a complex adaptive system as “agents” (Mitchell, 2009) this paper refers to the professionals within complex adaptive organisations as “actors” in order to foreground their agency and consider them separately to the non-human agents which also form a part of the organisation. Four key elements of complex adaptive organisations have been identified in the literature which are useful in the analysis of the studied organisations. They are emergence, adaptation, complex networks, and agency which are discussed in the following sections. The organisations studied were found to be complex in that they displayed these key elements.

Emergence

Emergence describes how the interactions of the actors contribute to patterns at the macro-level of the organisation that may have very different characteristics to those of the individual actors and which are not able to be predicted from their actions (Axelrod & Cohen, 1999; Jacobson & Wilensky, 2006; Reich & Hager, 2014; Sawyer, 2005).

As a concept, emergence is increasingly being used to understand and contextualise workplace learning (e.g. Fenwick, 2012a; Hopwood, 2014; Johnsson & Boud, 2010; Reich & Hager, 2014). Emergence in an organisational context is where ‘events and actors are mutually dependent, mutually constitutive and actually emerge together in dynamic structures’ (Fenwick, 2012b, p. 71). Emergence is not completely random and yet it cannot be predicted or directed (Lancaster, 2012), a situation requiring a high degree of adaptation from actors.

Adaptation

Numerous attempts have been made to define learning within workplaces and organisations but to date there has been little agreement. Within complex adaptive organisations, like all complex adaptive systems, learning means adaptation: the ability of the actors to adapt to the demands of their context, and to emergence, within the organisation and with reference to their relationships to the other actors (Mitchell, 2009). Learning and adaptation are critical parts of complex adaptive organisations and this has important implications for the ways in which individuals learn and work within them. In terms of complex adaptive organisations, the acquisition of skills, knowledge and relationships (networks) by the actors that make adaptation possible.

Complex networks

The concept of complex networks is an important one when defining complex adaptive organisations. These are specific types of networks that are not completely regular and not completely random (Newman, 2010). It is a term often applied to social networks through the idea of the small-world phenomenon (Milgram, 1967). What this means for organisations is that the actors operate within interlocking networks that are highly connected (Barabási & Albert, 1999; Watts & Strogatz, 1998).

Agency

Human agency sets complex adaptive organisations apart from other examples of complex adaptive systems such as flocks of birds, neurons in the brain or computers in a network. It allows us to interrogate the actors' motives and drivers for learning in ways not possible for non-human systems. It is perhaps the key defining feature of a complex adaptive system where the elements are human (Giddens, 1984) and it is the key factor in our ability to learn primarily on-the-job (Billett, 2001).

LITERATURE REVIEW

Complex Systems and Workplace Learning

This study is located in the emerging field of workplace learning and takes up work which adopts the approach broadly known as complexity. This approach has been considered by a variety of theorists as a concept which may offer better understandings of learning and practice (Davis, 2012; Fenwick, 2012a; Fenwick & Dahlgren, 2015; Johnsson & Boud, 2010; Lancaster, 2012; Reich & Hager, 2014). The applicability of a complexity approach to studies of work and learning is contested (Baskin, 2008; Chiva, Grandío, & Alegre, 2010; Stacey, 2001). The most frequent objection is that complexity is not appropriate to the study of social systems because of its origins in mathematics and natural systems which fail to adequately consider human agency and activity (Chiva et al., 2010; Fenwick, 2012a; Stacey, 2003). It has also been argued that complexity lacks the capacity to deal with questions of power and socio-political issues found within human systems (Fenwick, 2009, 2012a). Often, where complexity is used, researchers note that additions or amendments are needed in order to move it away from its positivist roots (Kuhn,

2008; Lancaster, 2012). Kuhn (2008) points out that there are some particular caveats when adopting the complexity approach, such as complexity being a 'space for thinking' and musing rather than offering prescriptive research methods in the social sciences (p. 185). Despite the potential pitfalls, the complexity approach is a key trend within the field of workplace learning (Fenwick, 2008). In order to access the useful insights offered by complexity, however, it is necessary to use it rigorously rather than metaphorically so as to fully exploit its potential for explanation (Fenwick, 2012a). This is a key goal of the study reported here. A key reason for adopting the more specific concept of the complex adaptive organisation rather than referring to the broader concept of complexity is that a complex adaptive systems approach foregrounds adaptation and learning within organisations.

Informal Learning and Learning through Work

The idea that most learning occurs while working rather than through formal education is not a new one. It is the original form of workplace learning seen in examples such as the medieval apprentice system (Marsick, 2009). Eraut (2007) found that the majority of learning occurs within the workplace and that even formal training requires further workplace application before it is useable. Workplace experiences are what develop competence over the course of one's life and are embedded in daily practice (Paloniemi, 2006). Learning is therefore conceived as part of the normal course of working and occurs through the process of working through any problems or new tasks that arise day-to-day (Boud & Hager, 2012). To this is added the opportunities to learn; what is afforded to the actors in terms of social, cultural and structural support for learning within a given workplace (Billett, 2001).

Discussions of learning through work raise the concept of informal learning. Informal learning and work has become a consistent part of the ongoing conversations about workplace learning (Sawchuk, 2008) and it is most often defined in opposition to the concept of formal learning (Marsick, 2009). Informal learning is generally thought to be anything that does not take place within a classroom or other organised or guided learning activity. It is unstructured and experiential, and often incidental (Marsick & Volpe, 1999). It is a part of the actors' daily work tasks and occurs spontaneously and "just in time" as individuals face a new task or a problem in their role (Marsick & Volpe, 1999). The term "learning through work" is used in this paper as it was found to be the best way to capture the experiences related by the actors. Referring to this as "learning through work" captures both the informality of the learning as well as the influence of emergence in the unpredictability and fluidity of work within complex adaptive organisations. In contrast to this, the paper also uses the term "structured learning" rather than "formal learning", a term more often used to describe learning in schools. This is to capture the particular experiences related by the actors in this study who often referred to this type of learning as "structured". This structured learning was described by the actors as being developed and conducted by the organisation and guided by organisational policies and procedures.

METHODOLOGY

This study employs a phenomenographic methodology to look at variations in the learning experiences of actors in complex adaptive organisations.

Phenomenography seeks to identify the different ways in which individuals experience aspects of their world, such as teaching or learning (Ashworth & Lucas, 2000) and originated as an educational research approach (Marton, 1981, 1986; Marton & Booth, 1997; Svensson, 1997). The focus of phenomenography is 'the empirical study of the limited number of qualitatively different ways in which various phenomena in, and aspects of, the world around us are experienced, conceptualized, understood, perceived and apprehended' (Marton, 1994, p. 4424). As a methodology it has been used in areas such as school education (Aprea, 2015; Kalvaitis & Monhardt, 2011; Pang & Marton, 2013), vocational education (Bliuc, Casey, Bachfischer, Goodyear, & Ellis, 2012; Sappa & Aprea, 2014), higher education (Entwistle & Karagiannopoulou, 2013; Woollacott, Booth, & Cameron, 2014), medical and nursing education (Dupin, Larsson, Dariel, Debout, & Rothan-Tondeur, 2015; Sjöström & Dahlgren, 2002; Wilhelmsson et al., 2010), and workplace and professional learning (Abdi, Partridge, & Bruce, 2013; Bailey, 2015; Paloniemi, 2006; Slotte, Tynjälä, & Hytönen, 2004).

Method

Sampling

Participants were identified through the professional networks of the researcher and approached to participate in the study. All of the participants approached agreed to be interviewed. Individuals were identified based on three factors: accessibility (in terms of geographic location and time availability), their role within the organisation (i.e. administration, professional, manager, or executive), and the industry in which they worked. Selecting participants with these factors in mind allowed for a range of perspectives from professionals working across a wide range of sectors at different levels of seniority. The participants represented nine organisations across seven industry sectors within Australia which included publically listed companies, not for profit, and government organisations. Organisations within the professional services, member services (peak professional body), banking, retail, radio and television production, scientific research, and pharmaceutical sectors were represented. Wherever possible, participants were selected from different levels of the organisation with the goal of having an even representation between those in administration roles, professionals, managers and executives which was achieved. There were also equal numbers of male and female participants.

Data collection

Semi-structured interviews, as the most common method of phenomenographic research, were used here (Sandbergh, 1997). Interviews were conducted with 14 participants looking at their experiences of learning within their current role and organisation. This sample size is within the recommended size for this type of study (Dunkin, 2000; Trigwell, 2000). The interviews produced around 16 hours of interview recordings which were transcribed verbatim into 145 pages of data. In order to allow participants the best possible opportunity to share their experiences, interviews were conversational with a range of questions developed in advance to help give direction to the interview. It has been identified that this style of interview, containing open-ended questions and with an empathetic interviewer, is best for phenomenographic research (Ashworth & Lucas, 2000). To help "bracket" the study

the interview questions and technique were trialled before data collection commenced, which allowed for a review of the interviewer's style, the questions being asked and how they worked in practice, and how prompts and follow-up questions were being handled (Ashworth & Lucas, 2000). The interviews employed a combination of direct questions and a critical incident approach to encourage participants to reflect on learning situations and describe their experiences of them. The interviews provided rich descriptions of the experience of learning in complex adaptive organisations and transcripts were coded using Dedoose in order to identify key themes before being subjected to a phenomenographic analysis.

Analysis

The goal of phenomenographic research is to produce categories of description which can then offer insight into the experiences of students or teachers (Ashworth & Lucas, 2000). These categories focus on variations of lived experience on the part of individuals (Marton, 1994). The analysis adopted for this study was adapted from the processes described by Patrick (2000) and Dunkin (2000) which suggested that the transcripts be reviewed in their entirety and key similarities and differences noted, grouped and gradually refined into the categories of description (Dunkin, 2000). Transcripts were also revisited in light of the initial categories in order to establish whether they encompassed all of the data which then allowed for a refinement of the categories.

In phenomenographic studies it is usual to have a researcher and a challenger/s in order to ensure inter-judge reliability (Sandbergh, 1997). Traditionally inter-judge agreement has been looked to in order to address the issue of recognising conceptions in the categories developed (Johansson, Marton, & Svensson, 1985; Marton, 1986; Saljo, 1988). Being a small project, this study has only the principal researcher to categorise the data. Patrick (2000) discussed how she chose not to re-categorise her material saying that it was a large task to be undertaken as part of a small-scale project and that, in any event, Sandbergh (1997) argues that it is not required. In this study the categorisation of material was a solo effort of reviewing and refining the categories periodically over a period of six months with some high level discussions and input from others towards the end of that process.

CATEGORIES OF DESCRIPTION

Four categories of description emerged from the interview data:

1. Learning is experienced along a continuum of structured learning and learning through work
2. The complexity of the organisation means that work is experienced as being fluid and influenced by varying degrees of emergence, agency, complex networks, and adaptation
3. Actors experiences of learning are influenced by the degree of fluidity in their work
4. Actors report an organisational emphasis on structured learning which is at odds with their experiences of learning through work

Learning as a Continuum

Category 1: Learning is experienced along a continuum of structured learning and learning through work

A common experience amongst the actors was that they had learned “on-the-job”. Their accounts referred to:

*...the things I'm learning are very much on the job, on the instant, on the fly anyway to some degree.
...my learning has been a lot from being involved and being allowed to be involved.*

There was a sense among the actors that they were engaging in a process of problem-solving in order to get their job done and it was only on reflection that they considered this as learning. This was often particularly revealed when asking the actors about how they “learned the ropes” in their role or how they approached learning new knowledge and skills as new tasks, projects, and issues arose. The actors often contrasted these responses with the structured learning activities provided by the organisation such as face-to-face courses, online courses and reference materials, coaching, and mentoring programs.

Learning, for all of the actors, was experienced along a continuum with structured learning activities at one end which were largely supported and promoted by the organisation. This cultural attitude was eloquently summarised by one actor as:

...if you're not in the classroom, you're not doing training.

At the other end of the continuum is “learning through work”, where most learning is experienced but is seldom named as such. These forms of learning are often not recognised as learning by either the learners or the organisation (Boud & Middleton, 2003). This may be because this type of informal learning is viewed as just a part of performing a job which makes the learning invisible, as described by the actors here (Boud & Middleton, 2003). Informal learning is also difficult to measure and to link to outcomes which makes it less attractive within many organisational cultures (Marsick, 2009). As Marsick and Watkins (1990) point out, within societies that might be described as “schooled”, there is a privileging of teaching that diminishes the recognition of the individual’s learning outside of formal instructional settings, hence the label “informal” (in Billett, 2014).

Fluid Work

Category 2: The complexity of the organisation means that work is experienced as being fluid and influenced by varying degrees of emergence, agency, complex networks, and adaptation

In order to make sense of how the actors learn through their work, it is necessary to also consider the nature of that work through the lens of the complex adaptive organisation. Considering work in terms of emergence, adaptation, agency, and complex networks helps to contextualise the experience of learning by looking at the impact of organisational complexity on a role. In this paper, the term complexity has

been reserved to describe characteristics of the organisation. With that in mind a new term was needed to describe the effects of complexity on individual roles and “fluid” is used to describe this. Fluid, in the sense used here, is juxtaposed with the idea of work being structured and clearly planned out. The following excerpt illustrates the fluidity of one such role:

...it's like okay when I left yesterday afternoon the diary was perfect. I get in this morning and there's you know, all these emails and it's like uh, what's happened and then you got to like change everything.

The degree of fluidity of a role is influenced by the degree to which the role is impacted by, and requires the use of; agency, emergence, adaptation and complex networks. The fluidity of the actors' roles, classified in this way, shapes their experiences of learning.

The actors provided rich descriptions of their work and work context, which required ongoing adaptation, working across networks, a high degree of agency, and dealing with unexpected issues that emerged through the course of their work (emergence). The following excerpt describes most of the elements of the complex adaptive organisation at play:

...things change all the time, so you've got to be able to adapt quickly and to be able to share that knowledge and skills too.

This excerpt shows the impact of emergence on the role through constant changes, the requirement to adapt to these changes, and the requirement to interact with networks as part of the role. These are unpacked further in the subsequent sections.

Adaptation and emergence

Adaptation and emergence are closely related and so best understood when discussed simultaneously. From the actors' reports, there was a clear sense that roles were subject to near constant change to which the actors needed to adapt. Related to the need to adapt is emergence which refers to unexpected outcomes within a given system. The effect of the unpredictability created by emergence is to create an increased number of occasions where adaptation is necessary. This is summarised well by one of the actors who noted that he was always learning.

You always learn from your mistakes. You apply for a promotion, you don't get it, you learn about it. Every new process that you have to implement that you learn about, every new initiative that comes along that either you wanted to do as an initiative or the organization wants to do as an initiative, you have to think about how that should be rolled out or what the best way of doing some procedure is. You're always learning.

Across the sample, the actors identified that their roles were highly changeable, time pressured, and required constant learning and a need to adapt to changing requirements and circumstances.

Complex networks

Inter-related networks were consistently identified by the actors as a key method of both learning and getting one's job done. One of the actors, for example, commented that:

In my role I've got to have people who are willing to have that relationship or have that...you know...to help us if we've got a request in [our department] and if I've got good relationships across the business it helps in getting things done and understanding the business a bit more.

Similarly, another actor highlighted the necessity of nurturing relationships among one's network in order to influence others to assist them in their role.

I think one of the big things that I see in every organisation and this one as well, it's those relationships that you're developing with others and how you're able to influence others in regards to say, assisting you with the job or giving information from them so you can hone your job in that way.

Agency

All of the actors interviewed exercised a high degree of agency within their role and were at relative liberty to determine their daily activities and longer term goals. This contributed in no small way to the fluidity experienced by actors as there were multiple, and often competing, demands placed on them requiring quick decisions and just-in-time learning.

Role Fluidity and the Experience of Learning

Category 3: Actors experiences of learning are influenced by the degree of fluidity in their work

The first two categories come together here to show how the actors' experiences of learning are shaped by the fluidity and complexity of their role. The greater the influence of adaptation, agency, complex networks, and emergence, the greater impetus towards naming their learning as "through work" in the first instance rather than as occurring through structured processes.

This was best illustrated in the accounts of two sub-sets of actors: scientists (n = 2) and administrative staff (n = 2). These actors, for different reasons, identified their learning as being primarily through their day-to-day work when asked directly about how they learned at work. In particular, they did not identify face-to-face courses as being "for them". Talking about this issue one scientist noted:

...the biggest thing day to day is just trying to solve the problems in your research that you encounter day to day and they're not really things that you can plan for in advance and put it in a development plan or anything like that.

Both of these groups reported very high levels of agency in their roles, particularly the scientists who almost exclusively defined their own work goals and daily tasks.

The administrative workers and the scientists also reported high levels of adaptation required for their work. For the administrative workers this mainly took the form of their roles being highly reactive to the needs of others whereas for the scientists it was the result of there being few other ways to learn available to them such as the specificity of the knowledge and skills required for their work.

Organisational Emphasis on Structured Learning

Category 4: Actors report an organisational emphasis on structured learning which is at odds with their experiences of learning through work

Overall, the actors experience learning as primarily part of their work practices, but at the same time they reported an organisational emphasis on structured learning. This cultural attitude was eloquently summarised by one actor as:

...if you're not in the classroom, you're not doing training.

This highlights a disconnection between how the actors experience learning and the learning opportunities that are materially and culturally supported by the organisations studied. From the perspective of the actors, the organisations studied positioned themselves procedurally and culturally at the structured end of the learning continuum. For example, a number of actors related accounts of picking courses just to write on their development plans and show their managers that they were “doing something” about their learning. As one actor related:

...we have annual performance agreements that, you know, contain some element of training and development and typically that's guided towards more formal things...you might find a course on something you want to do that you put in there.

Overall, the organisations studied were described by the actors as providing the structured learning that they expected while, on the other hand, not being seen as recognising “learning through work” and providing opportunities to learn in this way. Recognition was an important factor with one actor describing how:

I would take the course so I have something to show for it, something to say yes, I do actually have those skills. Because I know that looking for future employment for example, well they want to see qualifications which sometimes, although not always correctly, the qualifications are written down on the CV speaks louder than the experience you have.

An increased awareness of this disconnection offers an opportunity for practitioners and managers to reconsider the nature of current learning interventions and, importantly, what is named and recognised as learning within the organisation.

DISCUSSION

Individual Learning Practices

One of the key findings of the study is that learning is predominantly experienced through work. Certainly this is not a new idea (Billett, 2004; Boud & Hager, 2012; Eraut, 2007; Seely Brown, Collins, & Duguid, 1989) and informal learning has often been viewed as the primary mode of learning in the workplace (Billett, 2014; Eraut, 2010). A key difference here comes from using the complex adaptive systems lens to look at the nature and experience of the work itself as well as the experience of learning. This allows us to look at the organisation as a whole and how the complexity of the system impacts on individual actors through the relative fluidity of their work. Describing work as having various levels of fluidity takes up shifts in the broader organisational and learning literature towards adopting concepts such as “learning”, “becoming”, “organising” or “happening” suggesting fluid processes rather than static features of workplaces and learning (Clegg, Kornberger, & Rhodes, 2005; Schatzki, 2006). The notion of the degree of work fluidity also forms part of the balance between prescription and negotiation of work tasks with the actors interviewed here in a position to negotiate much of their work within certain prescribed organisational boundaries (Gherardi, 2013). Work in the complex adaptive organisation varies in the degree of fluidity which is influenced by the non-linearity of the system, and encourages learning and adaptation.

Emergence plays a key part in the fluidity of work and subsequent experiences of learning. The success of contemporary organisations is contingent on their ability to learn and adapt (Za, Spagnoletti, & North-Samardzic, 2014) and emergence is one of the key drivers of this in requiring actors to deal with variable problems, situations and outcomes. This has been noted across multiple workplace contexts including, for example, musicians where jazz ensembles have been used as a metaphor for learning (Purser & Montuori, 1994). The music of the ensemble emerges through the interactions of the musicians and how they react to the playing of others, changes in tempo, etc. (Purser & Montuori, 1994). Learning is also often described as “emerging” from practices (e.g. Manidis & Scheeres, 2013). This paper expands on these metaphorical usages of emergence by applying a complex adaptive systems approach which allows emergence to be considered as an essential characteristic of the organisation and examine how it influences experiences of learning.

Organisational Learning Practices

Actors reported that the prevailing organisational cultures tended to privilege formality in learning over informality, either explicitly or implicitly. The readiness of an organisation to ‘afford opportunities and support for learning’ is a critical factor in effective workplace learning (Billett, 2001, p. 210). For example, the interviews found that managers who failed to approve learning events or who were unskilled at having development conversations were detrimental to the learning of the actors who often either went around the manager or became demotivated. The role of the manager as a gatekeeper of learning is a powerful one. Schein (1996) describes three cultures of management that define the learning experience of the actors and, ultimately, the success of the organisation. The management sub-cultures of

executives, engineers and operators compete and intersect, creating tension. This tension means that learning cultures and practices are unlikely to change and that the cultures often act at cross-purposes in terms of how they approach learning (Schein, 1996).

In terms of Schein's (2010) theory of organisational culture, the espoused values of the organisations in this study, as reported by the actors, publically placed emphasis on informal learning and on actors taking responsibility for their learning. In reality, however, the artifacts of the organisation – such as the learning frameworks and programs - were focused on structured learning and these activities were tracked and measured against learning goals and development plans. The basic underlying assumptions of learning therefore become about what is measured and recognised within the culture of the organisation rather than what is learned (Schein, 2010). This drives learning towards formality and devalues informality in learning (Boud & Hager, 2012). Emergent cultural properties around learning may then be thought of as outcomes of traditional methods of control and organisation which push the actors towards formality. This is despite the highly variable context which, in all other respects, demands a more flexible, informal approach to learning.

CONCLUSION

This paper reports findings that learning in complex adaptive organisations is experienced by actors along a continuum between structured learning and learning through work, and that the degree of fluidity and complexity in one's role influences this experience. In adapting to the demands placed on them by the fluidity of their roles, the actors reported their experiences of learning as largely performative and embedded in everyday practices. Furthermore, they reported that the prevailing culture and learning practices within their organisations favoured structured learning. In not recognising the learning experiences of the actors as being predominantly through work, the organisations studied created a disconnection between how learning was named and recognised by the organisation compared to how it was experienced by the actors.

Limitations of the Study

A sample size of 14 may be considered small in terms of ensuring a sufficient degree of variability. Ideally, a team of researchers with more time and scope could have conducted and analysed a greater number of interviews. This was not possible within the scope of this particular project, something that others, such as Dunkin (2000) have found previously. As outlined earlier, within phenomenography a sample size of 10 to 15 participants is considered sufficient for the required level of variability (Trigwell, 2000).

In addition, this study was conducted by a solo researcher while phenomenographic studies are more commonly conducted by a group of researchers in order to support the findings through inter-judge reliability in the development of the categories (Johansson et al., 1985; Marton, 1986; Saljo, 1988). While Sandbergh (1997) argues that inter-judge reliability is not particularly reliable, the fact remains that it is more common than not in phenomenographic studies. As such, this study relies on

the iterative interpretations of one researcher rather than a team who bring differing influences and expectations.

Further Research

This paper presents initial work that frames learning at work within organisations as complex adaptive systems and the experience of learning within this context. Further research is needed to investigate the implications of this for learning practices in workplaces, particularly from the perspective of practitioners and management.

The focus of this study on individuals in knowledge intensive, office-based roles means that these findings are not presently generalisable to all workplace contexts, such as skilled trades and lower-skilled roles. Further research is also needed to determine if the definition of the complex adaptive organisation may be applied to these other work contexts and, if so, to what extent complexity and work fluidity influences the actors' experience of learning.

Concluding Comments

This study of individual experiences of learning within complex adaptive organisations offers insights into learning within twenty-first century organisations and provides a framework for understanding this by applying a complex adaptive systems lens. The four categories of description outline how learning is experienced along a continuum of structured learning/learning through work which is influenced by the degree of fluidity and complexity in the work tasks. This is contrasted with a cultural and practical organisational emphasis on structured learning, which often appears to miss the mark in terms of the real-time learning needs of the actors. The globalised economy is characterised by constant change and an increased imperative to work across networks within and between organisations (Drucker, 1988; Sargut & McGrath, 2011). In a world where change is regarded as continuous, the ability to learn and adapt is critical (Hislop et al., 2014). This research provides some insights into the experience of learning in this context and what individuals and organisations are doing, or not doing, to adapt their learning practices accordingly.

ACKNOWLEDGEMENTS

I would like to gratefully acknowledge the assistance of Ann Reich in providing comments on the manuscript.

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