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Transforming knowledge to knowing at work: the experiences of newcomers

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Abstract

This paper explores how newcomers experience their transition to work as they strive to move from a position of 'educational' knowledge to professional knowing. Hence, we focus on how newcomers learn to transform knowledge to knowing at work. We do this through the analysis of two ethnographic case studies: one with a focus on new office workers and the other on newly employed paramedics. In our analysis, we approach knowledge as a question of knowing through practise. This enables us to recognize the complexities of learning at and for work and learning and knowing as integrated processes, where learning is situated, relational and mediated. We find that newcomers' learning occurs through social interactions and participation, not simply by joining in but involving complex interactions to first find and grasp the pathways or the 'codes' (established organizational culture) that enable fruitful participation. Getting access to colleagues and thus, established practise is already considered important support for newcomers to learn to enact 'educational' knowledge professionally. However, we find that what is most important for newcomers is how they become knowledgeable as they recognize that it is not their educational knowledge, but working out how to engage and participate in the social practises, that counts.

Introduction

The transition from educational and theoretical knowledge to professional knowing has been investigated from a wide range of perspectives. For the main part, it has been found that support for newcomers from within the workplace that allows them to observe, discuss and attempt work, is of significant benefit. For example, there is a body of research concerning the process of novices becoming experts (Benner 1984, Dreyfus and Dreyfus 2005, Ericsson et al 2006), the forms and benefits of mentoring (Hager and Johnsson 2008), what might be described as 'transforming' educational or theoretical knowledge to professional knowledge and learning tacit knowledge in newcomers' socialization (Nonaka and Takeuchi 1995), learning to be and become professional in practise (Eraut 2004, Eraut and Hirsh 2007) through social participation (Lave and Wenger 1991, Wenger 1998, Nicolini et al. 2003, Gherardi 2006), and experience (Kolb 1984) and newcomers' learning as a complex social system, taking a holistic approach and recognizing knowledge as a question of knowing at work (Antonacopoulou et al. 2006). As a result of these developing explanations of learning, we find Cook and Browns' (1999:388) distinction between knowledge and knowing important, stating that *"Knowledge' is about possession, it is a term of predication. In all its forms we use it to indicate something an individual or group possesses, can possess, or needs to possess. 'Knowing' is about relation: it is about interaction between the knower(s) and the world"*.

Situated learning focuses on learning as both culturally and historically embedded and embodied in communities of practise (Lave and Wenger 1991), embracing the idea of communities of practise as locales of learning and knowledge (Brown and Duguid 1991). Within this approach 'to know' is based on becoming capable of participation. Newcomers go from legitimate peripheral participation to full participation through acquisition, maintenance and transformation of knowledge (Lave and Wenger 1991). In our experience, these accounts of learning and knowledge are very helpful in understanding how newcomers learn to work. However, we believe there is still a need to better understand newcomers' learning processes that contribute to their ability to apply or

enact knowledge (Easterby-Smith and Lyles 2003), where 'to know' is to be capable of participation in complex relationships among colleagues and activities (Gherardi et al. 1998, Fox 2000). This is the purpose of our study, to explore **how** newcomers learn to transform knowledge to knowing. That is, in addition to considering the type of workplace activities that support the development of 'knowing' (how to do their job), we wish to consider in more detail how the newcomer **experiences** these activities, and thus how they can best be supported in their development of becoming knowledgeable. This aspect of learning has not been given due attention in research. Also, by focusing more on the newcomers' transition experience into a new workplace, we seek to highlight the emotional and personal development aspects of learning for and at work and future areas for researching and understanding it. This establishes the need for research to address the socialization of workers in order to begin to participate in a work community and established practise, and how newcomers adopt and/or re-shape these practises.

In this article we explore how newcomers learn to transform knowledge to professional knowing based on newcomers' experiences in two case studies. Firstly, we develop in more detail our position in relation to knowledge and knowing and their relationship to learning. We then outline the case studies undertaken and present some of the common themes emerging from them and explore these in the context of the literature on organizational learning. Additionally, we note the main differences in the findings from the two studies. Finally, we conclude by discussing how a practise-based approach to learning can provide a fruitful contribution to our understanding of the complexity of newcomers' learning and transformation of knowledge to knowing at work.

The interplay between learning, knowledge and knowing

In this section we provide an overview of the issues raised in the literature relating to learning, knowledge and knowing that highlight the rationale for our inquiry and introduce the theoretical framework that drives and supports our study. We focus on how work is experienced and practised rather than what knowledge newcomers must learn,

exploring the emerging approach of knowledge as a question of knowing (Nicolini et al. 2003, Gherardi 2006, Filstad and Blaaka 2007). We also note that, as indicated in the introduction, the solid foundations laid in research regarding workplace learning and developing as professionals. As such, we do not revisit that literature in this section but highlight issues raised and explored in research that builds on and begins to extend these important foundational ideas.

Knowledge plays a central role in the organizational learning literature and is attributed with a wide variety of properties and qualities. However, the concept of knowledge can be problematic as a result of this diversity (Chiva and Alegre 2005, Schneider 2007). In particular, knowledge is often described in dualistic terms, for instance, explicit and tacit knowledge (Polanyi 1966, Nonaka and Takeuchi 1995), theoretical and practical knowledge (Aristotle) or knowing that and know how (Ryle 1949). Accordingly, educational studies have focused on individual's acquisition of formal knowledge, while practical knowledge has been the centre of attention in working-life contexts.

Increasingly however, attention is being paid to the integration of the so-called 'components' of knowledge in learning, and on the development of workers (Beckett and Hager 2002, Felstead et al. 2009). Dewey's (1930) assertion that knowing and doing are inseparable is also re-emerging (de Jong and Ferguson-Hessler 1996). Therefore, understanding knowledge in a network of relationships can help to answer the prerequisite of knowing, not false dichotomies of knowledge (Gherardi 2006).

Although the 'integration' of theory and practise is recognized in some theories, it seems the distinction is not fully understood or accepted because we continue to talk about 'transfer' (Tennant 1999) and 'converting' from one form of knowledge to another (Nonaka and Takeuchi 1995). However, a preferred view is that tacit knowledge cannot be 'converted' into explicit knowledge (Tsoukas 2005).

Tsoukas' (2005) suggests that we can work to 'unpack' our knowing, which is not a type of knowledge as such but a complex combination of actions and understanding that contribute collectively to performance. His views support our understanding of the

entangled nature of knowledge and learning and our assertion that knowledge in terms of workers is better considered as a question of knowing, that is, knowing how to apply knowledge through participation in social practises at work (Filstad and Blaaka 2007). With this (integrated) understanding of knowledge and learning, we can better understand the interplay between them as to *how* (not only what) professionals learn in order to become knowledgeable. That means shifting from knowledge as a substance to knowing as a process, where knowledge is not only emerging from practises but is itself a practise, a situated activity creating linkages to action (Lave and Wenger 1991).

This practise-based perspective emphasizes the collective, situated and provisional nature of learning and knowing (Gherardi 2006, 2009, Nicolini et al. 2003, Soule and Edmondson 2002), where knowledge is grounded in site-specific work practise (Marsick and Watkins 2001). Practising becomes a knowledgeable activity, that is, knowing-in-practise (Billett 2004). We explore whether this shift towards a practise-based approach of knowing is fruitful in the pursuit of understanding how newcomers transform “educational” knowledge to knowing at work.

Cook and Brown’s (1999) distinction between knowledge (a possession, a tool of knowing) and knowing (being relational, about interaction within a social and physical world), suggests the interplay of knowledge and knowing can generate new knowledge and new ways of knowing. They describe this interplay as a ‘generative dance between knowledge and knowing’ but emphasize that knowledge by itself cannot enable knowing. Their understanding of the entangled nature of knowledge, learning and knowing leads us to believe that more attention must be paid to the process of how we come to know.

We also explore the requirements from a holistic approach to learning, recognizing the complexity of what the learners as worker do, how they do it, why they do it and how they experience it. The learners’ experiences — not what they do or what is done for them and not how work is structured, but how it impacts on them and how they adopt and/or reshape established practise — are critical and yet often ignored.

Learning how to transform knowledge to knowing at work

Learning how we come to know is essentially what learning theories are about. However, complications arise when we begin to question (often implicit) assumptions that underpin these theories. As indicated above, learning and knowledge, or what you 'know', are tightly bound together. It is problematic, however, when knowledge is characterized as a possession as Cook and Brown (1999) describe. This kind of distinction between knowledge and knowing bears resemblance to the characterization of learning as respectively acquisition of knowledge or learning through participation (Sfard 1998). The differences emanate from a shift in considering learning from the individual's perspective only to it being based on social-cultural interactions, as situated activities (Brown, Collins and Duguid 1989, Lave and Wenger 1991, Engeström 2001). Learning through participation and practise at work has been described as an emerging paradigm of learning (Beckett and Hager 2002). It is believed to give a better conceptualization of learning, shifting from the individual to the social components and contexts of learning (Elkjaer 2003, Tsoukas 2005, Blackler 2004). Situated learning is about experience and capacities being developed through participation, including the process of acquiring values, beliefs, collective problem solving and organizational culture (Gherardi et al. 1998, Evans et al. 2006).

The exploration of the impact of social interactions on learning demands a focus on participation, situations or contexts and practise through a more holistic approach. More recent studies have demonstrated and theorized the more complex nature of learning at and for work. For instance, those studies relating to cultural and historical activity theory (Engeström 2001), complexity theory (Baets 2006), social systems of complexity (Antonacopoulou et al. 2006), contextual learning (Beckett and Hager 2002) and the development of the concept of context for learning (Edwards, Beista and Thorpe 2009). These relational framings of learning find expression in theories that emphasize activity and draw upon concepts of communities and networks. Here, context is an outcome of activity or is itself a set of practises, as such we have begun to focus on *contextualizing* rather than context (Nespor 2003). Practises and learning are not bound by context but emerge relationally and are polycontextual, i.e. have the potential to be mobilized in a

range of domains and sites based upon participation in multiple settings (Tuomi-Gröhn et al. 2003). Edwards & Miller (2007:8) in '*... taking a relational view of context, [are] viewing it not as something that pre-exists practise but rather something that is effected through practises.*' Consequently, learning can be described as a practise of contextualization rather than simply emerging within a context.

The reframing of context and consequently learning, where learning is considered more holistically by definition, requires that we focus on individual learners and their differences, social learning and collective participation, together with how they all relate to each other. Complexity thinking provides a way of dealing with these multiple viewpoints simultaneously.

Complexity thinking is an attitude concerned with the philosophical and pragmatic implications of assuming a complex universe, '*a way of thinking and acting*' (Davis and Sumara 2006:18). This thinking is influenced by what has been discovered about complex systems. A complex system, or unity, is collection of interconnected components or parts that are designed to support and produce each other. Complexity theories are based on scientifically developed concepts that have been adapted to apply to a range of complex systems including individuals and organizations (often referred to as 'complex adaptive theory (Holland 1995)). The underpinning belief in complexity thinking (recognizing individuals and organizations as forms of complex adaptive systems) is that people and organizations are self organizing and emergent: they emerge continually from the constraints of larger systems in which they are embedded (Byrne 2005). In very simple terms this means that they continually change and adapt to their environment in order to survive and in many ways they constantly change to stay the same.

As such, the relational nature of complex interactions between workers in organizations is highlighted. Davis, Sumara and Luce-Kapler (2000:178) encapsulated this idea of interaction based on self-organization and continual change well in explaining how '*the self is both invented and inventing, created and creating, a product of learning and an agent of learning*'. The most significant in this shift of approach is realizing that you

cannot either control all learning factors, nor is one factor more significant or critical to learning. This frees us up as researchers to be holistic in accounts of learning, not just acknowledging all the factors at play (like the workers' histories, emotions, experiences, personality, motivation and so on) but recognizing that the interactions of these and the interactions of the workers are all relevant.

Baets' (2006:87-88) presents a model of learning underpinned by complexity thinking. The model illustrates how the key concepts of mental models, emotions, knowledge, experience and interaction interrelate in learning. The identification and exploration of the relational nature of these concepts is critical here. Baets (2006) points out that we acquire experience and learn actions through these interactions. However, he suggests that these experiences cannot be transformed into mental models (or knowing) unless emotion is acknowledged within the experience. *'The emotions determine how employees feel in their job but also how and why they want to share, and more generally how they want to cooperate'* (Baets 2006: 88). Consequently, the emotional aspects of learning are established as equally important as the social and collective influences.

We note that other models of holistic learning are emerging as the concept of a holistic approach to learning is explored further and considered in various situations. For example, the 'work as learning' framework (Felstead et al. 2009: 35-36) is similar to Baet's (2006) model in that it is also underpinned by complexity thinking and enables consideration of both the 'individual and social'. Felstead et al. (2009: 4-5) explain that: *'Once learning is viewed as a complex, contextualized process, the door is open to additional insights into how knowledge and skills are developed, adapted, transformed and shared within the dynamic setting of the workplace.'*

These accounts of learning aim to ensure that learning is characterized as a complex social system and to renew the importance of embeddedness and situatedness of learning. We believe that learning, as stated by Antonacopoulou et al. (2006), must be understood as a dynamic, complex process, embedded in the ways in which the forces within systems define the conditions of their interactions, as product and processes of a

multiplicity of connections. Also, learning in a practise-based perspective emphasizing the collective, situated and provisional nature of knowing (Soule and Edmondson 2002, Gherardi 2006), where knowledge is grounded in site-specific work practise. This underscores our belief that we need to consider more than activities that support newcomers to learn to do their work. We also need to consider how they experience them, how they feel and why, how they interact and react and how to enable and facilitate their learning.

Consequently, our approach is practise-based, exploring learning to become professionals as an ongoing situated learning process of participation in social practises at work. The shift in our attention towards knowledge as knowing in action recognizes what learners do, how they do it, why they do it and how they experience it. In particular, a focus on knowing highlights the significance of the learners' experiences, not only what they do or what is done for them and how work is structured, but also how it impacts on them (physically and emotionally), how they feel and how they manage to adopt and re-shape established practise. This is the focus of attention in our case studies.

Research design

Two ethnographic case studies were undertaken to explore graduates' transition to work, and their experience of becoming knowledgeable. In both cases various forms of qualitative methods were used including, interviews, conversations, focus groups and observations. Additionally, in case 2, we also participated with the paramedics out on assignments, making notes of their experiences. On average we had contact with all newcomers two or three times during their first year, and all participants had at least one in-depth interview during this period. Interviews and notes were transcribed, translated from Norwegian to English, and analysed, using the qualitative data analysis software, Nvivo.

According to our aim of exploring how newcomers learn to transform knowledge to knowing at work, we chose to consider two that both involved relatively newly graduated

workers, with limited experience but each with varying degrees of specific focus of their education to the practical work of their intended profession and varying degrees of everyday emotional stress in their work. We chose one case where workers educational background related more directly to their practical work (paramedics), and the other where the workers' educational background was more general, that is not pointing directly towards a profession (administrative and economic studies). We also wanted one case where the workers were faced with apparently more emotional stress, (as expected for newly appointed paramedics), and one case with less apparent emotional stress (office-based positions).

Case 1. Newcomers in office-based positions

The first case included 20 new graduates (masters students), who started their professional career in 2007, after five years of higher education. There were 13 women and 7 men. The data is from their first year of employment 2007–2008. They were employed across a range of different industries but all in similar (office-based) positions. Their masters' specialization was within organizational psychology and leadership. All participants took part in one in-depth (semi-structured) interview after approximately two months and one follow-up telephone interview six months later. They also participated in one focus group with five or six newcomers.

Case 2. Newly appointed paramedics

The second case included 12 new recruits in an Oslo Ambulance Service, comprising 8 men and 4 women. The newcomers were in the post for between one and twelve months, all working in the same Service. We employed a qualitative research design that included 12 semi-structured and unstructured interviews, informal conversations, participative observations and two focus groups, each of six participants. Our research included observations and conversations with the newcomers out on call with the emergency ambulance service. These paramedics were employed as emergency personnel. Interviews were conducted privately at the station, and lasted from 45 to 120 minutes. Additionally, we had informal talks and conversations with their colleagues,

including one commander and one captain. Observations “on duty” were documented using field notes. These notes provided contextual details concerning norms, rules and organizational culture. They also provided us with data on emotional conditions and established emotional management at the station.

To distinguish participants’ comments in the two studies, quotes in the text are followed by P1–P11 when referring to the paramedics and N1–N14 for newcomers in ‘office-based’ positions. In the interpretative tradition, we typically asked research participants to reflect critically on work activities, their roles and the roles of others, and to make observations about how they began working in these new roles. We paid particular attention to the discourse used, in terms of the way participants talked about their experiences.

Findings and discussion

How they approach learning

Participants recognized the complexity of learning when diversity of knowledge assembles into knowing how to perform. The transformation from their idea of ‘educational knowledge’ to ‘knowing’ when confronted with work tasks and social practises at work, outlines the embeddedness of learning, as their consideration of how and when to apply what kind of knowledge is context depended. Four participants explained their strategies as follows:

I tried to get a hold of things that I could manage and just disregarded other things. I have been in a learning situation before and don’t manage to cope with everything at once. I have to select things and then use my knowledge when it fits. This strategy has worked well. (N5)

During the boot camp we received some information about emotional management, but we all differ in coping style, the general tendency to deal with situations in different ways ... I don’t think there is any right or wrong strategy. One has to find out for oneself what works for you, but do not focus on the emotion you feel at the time ... ever. (P3)

I brought my books which are on my desk and I often refer to them ... It is something familiar. Then I turn through the pages and find something I can use. I know it is not a very scientific way of using the material. It's just bits and pieces from here and there, but as long as it is a connection and there is a method in it, it is much easier to use it in my arguments.

(N6)

I have the longest education of the people that work here. So I can make a point and say that this is not a very suitable solution. But it is not appreciated. However, my education helps in understanding and being able to keep up with conversations and discussions. (N7)

These quotes support our belief that knowledge becomes a participative process of knowing (Gherardi 2009) — both knowing what to do and *how* to adapt to that — through people's continuous interactions with the surroundings. Hence, knowledge cannot be given any one definition, rather it will depend on the individual and the specific context, and is hard to 'transfer' from one context to another (Carlie 2002). With this understanding, knowledge will not only concern solving a given problem, but will also require (re)defining situations, deciding what is relevant, as well as structuring the problem (Säljö 2000). This can only be learned through practise, because it includes learning what is often referred to as tacit knowledge (Polanyi 1966, Nonaka and Takeuchi 1995), which requires knowledge sharing through participation with colleagues in social practises (Elkjaer 2003). This argument for understanding the entangled nature of learning and knowing (Tsoukas 2005) provides a mechanism to understand both what and *how* professionals approach learning to become knowledgeable (Elkjaer 2004, Billett 2004). Hence, learning and knowing is integrated through being, belonging, becoming, participating and communicating in communities of practise (Gherardi 2009, Blackler 2004, Lave and Wenger 1991).

Knowledge conceptualized as knowing, becomes a valid and useful construct in light of our observations, as it provides a special meaning in solving practical work tasks and emphasizes the context-specific, the unique and different requirements. Newcomers need to learn to identify and focus on the particular, as well as on varying and contextual aspects of knowledge and how they can relate to them and be part of them, instead of

focusing on the abstract and general, which often characterizes their education (and what they describe as their 'educational knowledge').

How to adopt and re-shape practise

In our analysis, the newcomers' desire and need for applying 'theoretical' or 'educational knowledge' in their work was highlighted. They all indicated that in order for this to happen they first must gradually attain the values, traditions and way of thinking within the workplace culture, and integrate them into the way they work. Or, as several of them stated, *'I need to learn the "code" for how things are done around here'* (N1/P1). For instance, they clearly recognize that they must learn the relevant professional language, not only the actual words that are familiar from their education, but how language permeates through the professional culture and is developed within it (Säljö 2000). One explains:

I compare it with learning a new language. You go away to a new place and are not able to pronounce the language. You have opinions that you are not able to express. So you feel that your intelligence is immediately reduced by 50%. It is perhaps the same in a new job. You are not able to see what you lack of knowledge. You find that things go very slowly. You would have preferred to master your tasks the first day, or the second, or the second week.

(N2)

For the newcomers, the focus was on the esoteric and ambiguous and it was in the specific act the worker showed whether they had understood the multiple demands of the situation. Thus, situations arise that newcomers described as overwhelming.

One of the most stressful things during the first part of the period is that you know the others are watching and evaluating you on the things you do, not just the medical part but how you socialize yourself. (P2)

I need balance in my life. I cannot feel that I am pushed over a cliff all the time. I need to value my education and my knowledge a bit more. I am not good at that. (N3)

They need to adopt and understand rules, values, norms and therefore the organizational culture that is not explicitly stated or announced. Instead, it assumes own experiences through practise together will colleagues. As one explains:

Once I am able to go into HR, then I think it is fun. And I have done presentations at school and feel comfortable with that. But then I started to focus on the fact that presentations in professional life are something else entirely. You have to do it in a more practical way. I think I am a person that is afraid and have a lot of respect for other peoples' experience. I think experience is what counts. (N4)

Mostly, we find that newcomers have had to focus on learning established practise, that is, norms, values, rules and regulations before they are able to contribute to the workplace. Grasping the complexity of the context enables them to apply their knowledge as knowing how to perform and become knowledgeable at work (Antonacopoulou et al. 2006, Baets 2006). Newcomers need to recognize that learning the "codes" enables learning through practise. So, even though newcomers may not be conscious of it, joining in on social practises and practising together with colleagues result in them becoming part of that practise and as a result re-shaping or to some extent affecting it (Gherardi 2006). More significantly, however, newcomers find that moving from legitimate peripheral participation to full participation (Lave and Wenger 1991) is challenging. They need to find out how to access knowledge and the colleagues necessary to enable them to participate. Also, they must acknowledge that their educational knowledge must be transformed to knowing how to perform professionally.

Learning is relational – getting access to colleagues is key?

The newcomers' experiences also highlight that knowing involves more than just having information to hand and performing certain techniques. In fact, in some cases the documented processes of persons in charge do not always reflect reality or cover all scenarios. Newcomers need to adapt to the group's way of thinking, its artefacts and the

existing ways of solving practical problems. There may be work tasks that demand completely different things, where particular aspects of the professional role are significant. Thus, it is claimed that a large portion of knowing in daily work involves being in the right place at the right time or being in contact with the right person. To get access to, or to observe 'knowledge in practise' by colleagues, helps in understanding and eventually mastering the various ways of working. For example, weekly meetings and reports are important for exchanging information. The verbal artefacts that are part of these meetings and other daily work are expressions of the professional group's embodied culture and values. Through participation, the newcomer observes and becomes initiated in this culture that encompasses the work rhythm, how the work tasks are organized, who leads and manages the work and who takes on which tasks. Some participants explain:

... well, you have basic theory from your studies, but it is only a small paving stone of it all. It is a tool to learn business, the rest is practise, concrete courses and training. Nobody is a 110% professionally qualified, but we have a foundation to build on, a methodology to work with, but not enough practical knowledge to be up and running. (N8)

There is sort of a face-factor. If the incumbents do not like you and tell the chief, you're out ... easy as that. I do understand that actually. If you do not understand the humour and the culture you do not stand a chance here at the station. (P4)

It is all about learning and understanding the profession, that people are different, understanding people. I feel that I have a strong background due to my education. (N9)

Through practise, how to perform in a given context or situation is learned. Two of the participants explain:

I feel quite prepared. But at the same time, tasks vary a lot so you will always need more time to solve them. Then it is nice to know that you have a lot of knowledgeable colleagues who can support and guide you. (N10)

The things that are most important to learn, you cannot learn through reading. So, to participate without having the main responsibility helps and reduces stress. To have an established partner to lean on is important. (P5)

For the paramedics, it is more overtly about coping with emotions in order to be able to use medical background and expertise (Filstad 2010). They need to develop experienced-based and situated knowing in order to concentrate on the job they are supposed to do, instead of panicking, being emotionally stressed and losing sight of the situation. This is focused upon during their socialization, where their relationship with their partner becomes important to their learning processes.

I know this was more difficult for the paramedics with kids the same age. I can promise you if you don't focus on the problem in front of you, but instead focus on the emotions running around your body ... trust me ... you will have nightmare for years. (P6)

Whenever I feel the need to debrief and talk about something or I have an emotional reaction I use my partner. I trust him more than the EFOK (formalized briefing). This makes one extremely close. I do talk about emotions more with him than my wife. (P7)

Opening up about vulnerability is not something one does that easily. Nor do I know or trust the people as I trust my partner. It is more comfortable using her and I am glad the EFOK is an opportunity not a must. (P8).

Through interaction with experienced workers, newcomers learn the culture of the organization and its members as they become initiated into the cultural traditions, methods and values. Through participation they learn how to distinguish what is important in order to be able to operate as a full member of the organization. They need to develop confidence and feel comfortable about their role in the team or organization. In other words, newcomers cannot just be taught what they need to know. On the contrary, the newcomer must be prepared by being given the opportunity to observe, listen and attend to the ways that work tasks are solved and find ways to fit in.

Consequently, newcomers need access to colleagues in learning to become professional (Filstad 2004). This idea of observing and working with colleagues is not new in itself, but what our participants are showing us is that this is not so straightforward or unproblematic as it has been presented and discussed in the literature to date. Previous literature has for instance failed to address or ignored relations of power and political structures in learning through participation (Antonacopoulou 2006, Fox 2000). Instead, the literature has biases towards presenting or assuming harmony and coherence (Gherardi and Nicolini 2000, Contu and Willmott 2003). However, often access to colleagues must be 'earned' informally. They need to find out how to continue to receive necessary information or access the right people, which include identifying power and political structures involved that often represent the social energy that fuels processes of learning and knowledge (Lawrence et al. 2005). Proactive newcomers may get the necessary access to colleagues more easily but where personalities clash or newcomers are shy, access is denied (Filstad and Blaaka 2007). And newcomers who are provided access to experienced staff (whether it is part of a structured process or not) need to know how to utilise that access to the best of their ability, not just learn what they need to know but to find out who and what they need to be aware of and to understand. Either way, it is of crucial importance that newcomers gain access to colleagues and thus established knowing, that enables them to participate in work. Hence, approaching learning and knowing as practise-based, recognizing its collective, situated and provisional nature (Gherardi 2009, Soule and Edmondson 2002, Nicolini et al. 2003) is fruitful to our understanding of newcomers learning processes.

Learning to "cope" and "coping" through learning

The main difference between the two studies lies in the extent to which socialization was organized and/or structured into work practises, and thus, the extent of formalizing newcomers learning. The paramedics' training was to a larger degree formalized, while the newcomers in office-based positions were more or less responsible for their own

learning. Also, the paramedics are expected to adapt to the organizational culture, not re-shape established practise or “rock the boat”. “Office workers” are expected to contribute to work, but the participants’ experience shows that they must themselves take necessary responsibility for learning established practise and “grasp” the organizational culture before their ideas and other contributions are welcome. So, instead of being able to apply “educational” knowledge”, it took them more time adjusting or/and finding the ‘codes’. That is, learning the rules, norms and values of established practise.

This led to some frustration:

Now I have got more experience at work, so things are improving. I miss using my educational background. There is not that much focus on that once you are working. Where did all the theories from five years of higher education go ...? (N11)

I was not prepared at all when it comes to customer care. But I like to learn new things and be able to develop new knowledge to achieve new goals. (N12)

They are not concerned about my education. When you are employed, then you start from scratch again, even though I use my methods. I was prepared and know that the more experience I get the more important my education will be. (N13)

It is highly likely that the business students’ frustrations grew because they were not aware that they would need to adapt in this way, they were not prepared for it prior to joining the workforce. However, there were also examples of positive experiences. One participant explains:

I use my educational knowledge every day. It matches very well the theories and my education. I use my books, taking the models and theories and apply them directly to my work. On everything, actually. I am surprised that I have been able to use so much directly. I think that is very satisfactory. (N14)

For the paramedics, the experience was different. They learned from the beginning that either you fit into the culture or you are out. Consequently, they had to identify with established practise on how to work and what they stand for as a priority.

This is such an extraordinary profession and the culture is everything. Remember we are together 24 hours. During the boot camp we are told that newcomers create uncertainty. As an unpredictable voice, a person who has no loyalty to the group, the newcomer implicitly threatens to diminish the power and influence of some older members. In order to prevent newcomers from rocking the boat by participating too soon, group members will often try to put them in their place — at the bottom of the ladder. (P9)

The paramedics know that since they are part of the final selection of approximately 10 newcomers who are hired from around 500 applications each year, personal attributes are significant. 'Family' was a metaphor consistently utilized by each participant to describe the membership, identity and the culture at the station. They believe that once you are accepted as a family member, then you are socialized.

I can't explain what the feeling of being one of the members in this organization means to me. The way they treat me is indescribably positive. It's like one big happy family so to speak, the bond we have between us is irreplaceable. (P10)

The familiar nature of the relationship at the station provides a context conducive to providing social support. This aided the newcomers in coping with the stress of becoming a new paramedic. However, an important part of their learning processes is how to earn social support. Mostly, social support unfolds at informal learning arenas. Thus, they have to "earn" access to these arenas and thereby access to their colleagues.

I think the 'family' aspect is a crucial aspect. As a newcomer we all feel some anxiety and a safe atmosphere without a doubt decreases this anxiety. (P11)

The bond between us is so strong due to the extreme and horrific events we experience together, that normal people never experience in a lifetime. The atmosphere this bond results in at the station and the climate is irreplaceable. (P12)

It is assumed that common experiences develop similar values, motivations (goals and needs), beliefs and attitudes (Scherer and Tran 2001). These similarities, in turn, are responsible for the members' shared appraisal dispositions, which tend to produce similar

emotions in response to specific events. Obviously, such shared dispositions are essential components of what is generally called 'culture'. Finding a way to participate in these experiences appropriately, in any given workplace, is then the challenge for newcomers. We find that paramedics moreover *learn to cope* through more formalized socialization within an emotionally demanding profession, and where safety and following rules are critical. While for office workers it is more a question of *coping through learning*. Meaning that learning the "ropes" is informal and in many cases their own responsibility but no less critical to how they become knowledgeable or in effect, how they become able to apply 'educational' knowledge as knowing in professional work.

How newcomers learn to become knowledgeable in professional work

Our findings suggest that how newcomers learn to transform knowledge to knowing rests on their ability to 'fit in socially', both in order to learn the rules of established culture, and get access and obtain confidence to participate in established practise. While we recognize the importance of their educational knowledge, to 'apply' or use this knowledge and perform in their job, the social and emotional aspects of work are at least as important and indeed necessary in order to get access and participate effectively. Newcomers are expected to 'automatically' develop socially and emotionally, and to learn established "codes", and in most cases they do eventually. This is crucial to them becoming knowledgeable.

We believe that complexity thinking underpinning the more holistic approach to learning for and at work utilised in our design and interpretation is necessary and has been fruitful in our attempt to better understand how newcomers become knowledgeable in professional work. By exploring graduates' transition to work from a practise-based approach, integrating learning, knowledge and knowing, we have been able to better understand the process of *how* professionals come to know in a way that informs our approach to education and work practises. Taking a practise-based approach to learning and knowing, we have been able to understand newcomers' experiences related to actual

learning processes and how they 'applied' knowledge as a result of these processes to develop knowing. Thus, by recognizing the interplay between learning, knowledge and knowing we can explore and develop new ways to facilitate and encourage the type of learning that will support them to do their job.

For newcomers, their learning includes much more than knowledge as such, the challenge is often to find a pathway to participation. They strive to adjust to the organizational culture and find that their 'theoretical knowledge' is not the most important. On the contrary, their socialization of finding established "codes", i.e. norms, values, rules and regulations, is vital. We find that they manage, as long as they are able to learn enough about practise in order to *enact* their knowledge as knowing in professional work. So the need for being socialized, obtaining their own experience and be able to grasp the organizational culture is vital to their ability to utilize educational knowledge as knowing in professional work.

However, in observing how newcomers experience the transitional period in new jobs, including emotional and social aspects of their experience, we see that it is not just that these newcomers become participants by learning the 'rules', but it is also very important to appreciate how they come to know the rules, understand them and work within those rules. Thus what we learn from our studies is that supporting the transition to work must go beyond 'educational knowledge' and practises (knowing what to do). Practicing becomes a knowledgeable and dynamic activity, and understanding the embeddedness, situatedness, mediatedness and relational characteristics of learning and knowing is key (Antonacopoulou et al. 2006). In our observations, we have seen the complexity of social relations that form and are part of learning. We found that newcomers' learning occurs primarily within these relations, from the result of these complex interactions. To prepare newcomers for the challenges they will face in their transition to work requires enabling them to reflect on reactions and approaches to work and how they relate to others.

Many of our participants, when describing their experiences in our interviews, inferred that they had engaged in these types of practises, coming up with coping mechanisms

and that they were valuable in assisting them in becoming knowledgeable. This was the case for both those newcomers who were more formally supported in their social and cultural initiation as those who were not. This indicates that newcomers generally would benefit significantly from developmental work around the ability to understand a context and the culture within it and to know how to adjust to it. It would also support the newcomer in knowing how to gain access to the colleagues that can help them most in transforming their knowledge into knowing. These types of skills typically requires a high level of self-awareness (for example, using critical reflective practise), as well as methods for developing an awareness of the importance of context and culture in learning and how to understand it (McManus 2010).

Also, in learning to become professional, we have seen that power relations deny as well as enable necessary access to colleagues. Hence, newcomers learning processes involve relations of power that must be identified (Contu and Willmott 2003) and the impact they have in conforming to social norms (Vince 2004). Developing newcomers' skills that enable them to identify and become more aware of different ways power relations exist and are used, as well as understand how to navigate these power plays could also be very useful.

The development of all these skills suggested in enhancing the ability to socialize and participate at work could be incorporated into both education and workplace activities and systems. In either or both cases, highlighting the need to focus on how work is experienced and practised as well as what knowledge newcomers must learn will be valuable in transforming knowledge to knowing.

Finally, although our case studies have been revealing, we acknowledge that further investigation into the implications of these findings and how they can be best utilised is required. We believe it is necessary to explore, for example, the emotional aspects of learning how to participate in social practises, as well as the power issues and conformity with social norms and how we can best support the development of newcomers' social (cultural) awareness, self-awareness and critical reflective skills as well as the

effectiveness of these new practises. So while it is agreed that newcomers learn how to transform knowledge to knowing through participation, we believe that those experiences can be improved such that 'knowing' can be more effectively achieved if we do more to support the development of newcomers' ability to access and manage their participation on a social and cultural basis.

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