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Umeå School of Education

Umeå University
Sweden

EDUCATION INQUIRY

Education Inquiry is an international on-line, peer-reviewed journal with free access in the field of Educational Sciences and Teacher Education. It publishes original empirical and theoretical studies from a wide variety of academic disciplines. As the name of the journal suggests, one of its aims is to challenge established conventions and taken-for-granted perceptions within these fields.

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Editorial

Education Inquiry is a new international online, peer-reviewed journal with free access in the field of Educational Sciences and Teacher Education. It is published by the Umeå School of Education, Umeå University, Sweden and is issued four times per year (March, June, September, December). It pursues original empirical and theoretical studies from a wide variety of academic disciplines. The new journal will hopefully fulfil our ambitious expectations as regards publishing interesting and important research from different national contexts. It is our ambition to make it international in that sense. Also, as the name of the journal suggests, one of its aims is to challenge established conventions and taken-for-granted perceptions within these fields. *Education Inquiry* welcomes research from a variety of methodological and theoretical approaches, and invites studies that make the nature and use of educational research the subject of inquiry. Comparative and country-specific studies are also welcome. *Education Inquiry* readers include educators, researchers, teachers and policy-makers in various cultural contexts.

The journal has been established in a period of time when education systems are undergoing radical changes all over the world. Big and strong policy actors in this connection are the Organisation for Economic Cooperation and Development, the United Nations, UNESCO, the World Bank and, from the European horizon, of course also the European Union. What unites the development and proposals that are being brought forward is a logic based on neo-liberal and market-oriented ideas. The guiding principle is competition and surveillance. The Programme for International Student Assessment which today, according to its own statement, covers 90 percent of the world's economies has now become a hegemonic enterprise as regards the reform of national education systems in terms of more external examinations and more privatised options. Neo-liberalism and a market orientation also have an impact on higher education, where excellence research, external research funding on a competitive basis, research efforts evaluated in terms of impact and international publication are mantras constantly being repeated. Several articles in this issue of *Education Inquiry* deal with different aspects of this fact.

We are pleased to be able to present articles from four different countries in this first issue, namely Australia, Scotland, the USA and Sweden. Linda Croxford's article "Tensions between the Equity and Efficiency of Schooling: the Case of Scotland" shows, on the basis of two recently completed research projects in Scotland, "how pressures for continuous improvement in attainment lead to practices that exacerbate inequalities". In the article "A Critique of Instructional Objectives", James McKernan argues that the 'objectives model' of curriculum planning predicted upon behavioural performances has become the dominant form in Europe and elsewhere in the world. In his article he argues that the objectives model is satisfactory for training or instruction, but not when applied to a true sense of 'education'. Cole & Hager's article "Learning-practice:

The Ghosts in the Education Machine” discusses, on the basis of theoreticians and philosophers such as Ryle, Wittgenstein, Deleuze & Guattari and Dreyfus & Dreyfus that, no matter how thoroughly and precisely one tries to put into words and describe a teaching situation, there is always “an element missing in the teacher’s account”, which in the article is called “the ghosts in the education machine” and which can be attributed to the complexity, multiplicity and variation in every teaching context. The fourth and last article in this issue, Christina Olin-Scheller’s “Literary Prosumers – Young People’s Reading and Writing in a New Media Landscape”, focuses on another international phenomenon, namely the digital media society that has in many different ways changed the prerequisites for teaching and learning. With examples taken from different types of fan culture, she shows that culture is a matter of ‘user generated content’ and that young people in that sense are vital participants as ‘prosumers’. In these contexts patterns for learning are being developed that can also be used in an educational context.

Per-Olof Erixon
Education Inquiry Editor
EducationInquiry.Editor@adm.umu.se

Learning-Practice: The Ghosts in the Education Machine

David R Cole* & Paul Hager**
University of Technology, Sydney

Abstract

The ghosts of this paper refer to the ways in which diverse practices and learning styles coincide in particular frames. This article will combine the philosophy of mind with educational poststructuralism to generate an informed approach to understand learning-practice. This combinational analysis rests on certain principles and focus points such as: 1) Language plays a crucial role in the orchestration of practice; 2) Learning cannot be separated from its contextual instantiations; 3) The conjunction learning-practice is meaningless without a discussion about the language of practice and the learning context. This approach called learning-practice will be furnished with an example taken from research into vocational education and the learning of an orchestra. This example will act as an experimental field to test the principles and focus points of learning-practice. The research field also acts to examine the coherence and cogency of the philosophy of education that we may draw from this perspective that strategically deploys ideas taken from Ludwig Wittgenstein, Gilles Deleuze & Félix Guattari and Gilbert Ryle.

Keywords

Learning, practice, vocational education, Gilles Deleuze, Félix Guattari, Gilbert Ryle, Ludwig Wittgenstein.

Introduction

Something complex happens in between theorising an account of a practice or an incidence of learning – and understanding and applying these accounts. For example, a teacher might organise and execute an exemplary lesson that deploys information technology to his or her advantage and engages the cohort of students in brilliant learning. However, when the teacher comes to write down the action of the lesson, and excitedly sends off this example of best practice to an academic waiting eagerly in his or her university office piled high with research reports and journal articles, there is always an element missing in the teacher's account. This missing part is not due to the writing competence of the teacher or the analytic reading skills of the academic, but it is what we are calling in this paper 'the ghosts in the education machine'. These ghosts appear because practice and learning are also framed by complex multiplicities

*David R Cole (Senior Lecturer), University of Technology, Sydney. E-mail: David.Cole@uts.edu.au

**Paul Hager (Professor), University of Technology, Sydney. E-mail: Paul.Hager@uts.edu.au

of variation that extend description from accounting and into qualitative regimes of intensity (Maturana & Varela, 1980). Famously, Polanyi (1964) maintained that in the performance of taken-for-granted skills, such as recognising faces, humans ‘can do more than they can say’. The point here is not that only when the science of face recognition advances sufficiently will we then be able to provide a full account. Rather the claim is that, in principle, important aspects of skill performance remain tacit. These ‘ghosts in the skill learning machine’ are a key aspect of the influential Dreyfus model of skill acquisition (Dreyfus & Dreyfus, 1986; Dreyfus, 2001).

One could perhaps hold up one’s hands and dismiss this problematic as being beyond normal functioning individuals. Yet there is important philosophy of education work to be done here. Firstly, the ghosts highlight the complex nature of education (Fitzsimons, 2007) and the many ways in which it may be over simplified or distorted if its description and orchestration is placed in inappropriate hands, for example, politicians or systems managers. A recent example is provided by so-called ‘generic skills’ initiatives. Far from showing any understanding of how undetermined skills are by verbal descriptions of them, it is commonly assumed that the mere naming of a putative generic skill is sufficient to set it apart as a discrete entity (Hager & Holland, 2006, pp. 19-21). Secondly, the ghosts are also indicative of the power relationships and hierarchies that are inherent within education and make the work of the teacher and academic equally difficult given that the missing parts of educational practice and learning are exactly what one needs to know to get the job of an educator done. This paper will therefore attend to these ghosts and develop a pragmatic position to help to understand what happens in the gap between the ‘knowing how’ and the ‘knowing that’ (Ryle, 1949).

Ghosts

The ghost in the machine of Gilbert Ryle’s philosophy of mind (1949) was the lingering remnant in the belief in the soul and the consequent dualism between the body and the mind. Whilst this philosophical quandary is now largely ignored except in religious circles, questions still remain in terms of the nature of the mind and the ways in which cognition may be operant (Dennett, 1991). For example, if all we do is turn on our brains when we think, how can reflective practice exist and why do we as educators have to worry so much about motivation? Also, if learning and practice were just a matter of the brain uploading information and consequently using it, why do we need to elaborate pedagogic apparatuses and theories of education such as those contained within and involved with constructivism? (Boghossian, 2006)

The answers to these questions do not lie in a return to the soul. Ryle (1949) proposed a solution in his dispositional sentences that he explained were to be: “at once narrative, explanatory, and conditionally predictive, without being a conjunctive assemblage of detachable sub-statements” (p. 135). In other words, it was his contention that language plays a vital part in communicating the complex dispositional ways in which we might want to transpose reality into thought. The teacher writing down just

exactly what he or she did in their great lesson will always miss out the dispositional aspects of the learning that are dependent on context. Whilst it might be tempting to view dispositional learning as relatively unimportant in the overall diversity of learning types, Winch (1998, p. 19) argues that knowledge is largely dispositional in Rylean terms. Indeed, so-called ‘practice theorists’ view recognition of the centrality of dispositions and know-how as turning epistemology on its head. They conceive of “practices as embodied, materially mediated arrays of human activity centrally organized around shared practical understanding” (Schatzki, 2001, p. 2). For practice theorists, “embodied capacities such as know-how, skills, tacit understanding, and dispositions” displace “once cited mental entities such as beliefs, desires, emotions and purposes” (Schatzki, 2001, p. 7).

This prioritization of practices over mind brings with it a transformed conception of knowledge.knowledge (and truth) are no longer automatically self-transparent possessions of minds. Rather, knowledge and truth, including the scientific versions, are mediated by both by interactions between people and by arrangements in the world. Often, consequently, knowledge is no longer even the property of individuals, but instead a feature of groups, together with their material setups. Scientific and other knowledges also no longer amount to stockpiled representations. Not only do practical understandings, ways of proceeding, and even setups of the material environment represent forms of knowledge – propositional knowledge presupposes and depends on them.

(Schatzki, 2001, p. 12)

At this point, one could perhaps hand over the work of understanding the subtle and affective parts of the teaching and learning to educational psychology, and this subject knowledge has certainly gone a long way in terms of understanding dispositions and attitudes in education (Woolfolk & Margetts, 2007). However, to retain an open outlook, one must continue to question the assumptions behind the complexity of the situation and the potential ghosts produced in an attitudinal analysis of the self.

Education

The philosopher who has perhaps gone furthest in questioning the psychology of education is Wittgenstein (1963) in his *Philosophical Investigations*. If we follow Ryle’s line of argument and understand cognition as the production of dispositional sentences, it is easy to see that even though dualism has been eliminated the ghosts may creep back into the system through the meaning of the dispositions, and the boundaries of the self through which these dispositions may be assigned. Wittgenstein (1963) challenged the ways in which meaning and language are connected by arguing that the construction and identification of a rational ego to explain cognition ignores the many ways in which language responds to unconscious factors that may dictate our reactions to context (Freud, 1932). For example, the teacher in the ICT lesson may have developed a knack with technology and understand the best way to use the equipment through concentrated experimentation over a long period of time. The key

to his or her success therefore lies in the foregrounded practice and ways in which pedagogy, knowledge and action have been integrated through trial and error.

Suppose you came as an explorer into an unknown country with a language quite strange to you. In what circumstances would you say that the people there gave orders, understood them, obeyed them, and rebelled against them and so on? The common behaviour of mankind is the system of reference by means of which we interpret an unknown language.

(Wittgenstein, 1963, section 206)

Wittgenstein is arguing against the possible development of a private language to explain the attitudinal input into cognition. He uses the idea of language-games to explain the social and playful ways in which words settle on meaning and extend our understanding of attitudes and emotions outwards from private and isolated affairs and into public matters. For Wittgenstein (1963) the subject of psychology does not exist without the linguistic articulations and ways in which behaviour may be explained and communicated interpersonally (Arnold, 2005). One might ask what becomes of the inner self, or the unuttered musings that one might have in the daily course of events according to this perspective, yet Wittgenstein maintains that the existence of such thought only comes about due to the social reality of communication. According to this perspective, the teacher is playing a language-game with the academic by explaining the contents of his or her lesson; the academic is in return playing a game of publication and explanation of the lesson by using technical language and conceptual and referential constructions to get the ideas across to a particular audience. Yet there is perhaps still room for ghosts to appear in this linguistic interplay of thought and action.

Wittgenstein's (1963) attack on the founding rational ego opens up space for its replacement. What does animate us to speak and exchange meaning if we are merely playing games? Why is poetry so powerful if all we ever do is take on board and displace public personas? What is the meaning of society and community if all that brings us together is the interplay of language? The ghosts that develop due to Wittgenstein's late philosophical ideas are located at the edges of consciousness and in the ways in which thought is connected to the bodily exchange of ideas (Probyn, 2004). One could say that by 'stepping up to the mark' and having a go at explaining exactly why the exemplary lesson worked so well, the teacher is attempting to change the power relationships that exist between him or her and the occupation of teaching. This is more than playing a game. It is the embodiment of learning through the practice of language and thought. It is also an attempt to make the conjunction learning-practice and to represent it in words and ideas. So whilst Wittgenstein (1963) may be commended for dealing with the slide into psychology that could come about due to the dispositional language of Ryle (1949) ghosts may open up in the underbelly of his approach to language and meaning. Whilst stipulating that there could be negative forces at work in the complex power relationships that may develop between participants

in the language-games, Wittgenstein does not move towards integrating them into his argument. We therefore need a form of argument for the purposes of this paper that accepts the denial of psychology whilst explaining the possible conjunction of learning-practice and the power relationships that are latent in this construction.

Learning + Practice

The philosopher who has moved furthest in this direction of explaining learning-practice is Gilles Deleuze. In the co-authored writing with Felix Guattari (1987), the pair conceived of a mechanism called the “machinic phylum” (p. 406). This concept relies heavily on the work of socio-linguists such as William Labov (1971) who had discovered that some of the rules of language, that he called “variable rules” could generate systematic, endogenous or ‘growing from within’ variation (p. 21). For example, in small urban communities social networks may develop that use language as a “badge of identity” (De Landa, 1993, p. 14). These identities circulate around the community and define power relationships, allegiances and structures that maintain and transform the local dialect. In effect, Labov’s (1971) research forms a potential bridge between the dispositional sentences of Ryle, the language-games that Wittgenstein refers to and the power relationships that could potentially undermine the circulation of social meaning in any system.

In terms of the example of our teacher investing time and energy writing up his or her excellent classroom practice and sending off the account to an academic; understanding of systematic endogenous variations in the account may add to the plausibility of this ‘best practice’. In other words, the teacher is building an education machine. He or she wants to explain the collective practice of ICT in his or her school, and the ways in which this practice has been transformed. He or she wants to pinpoint the ways in which students have learned according to a particular pedagogic approach. Meaning therefore comes through and due to the complex processes that are inherent within the communal teaching context or, as Deleuze and Guattari (1987) put it:

...there is no simple identity between the statement and the act. If we wish to move to a real definition of the collective assemblage, we must ask of what consist these acts immanent to language that are in redundancy with statements or that constitute order-words.

p. 80

This movement towards a definition of the collective assemblage moves us further to understanding the gap between the teacher and the academic. According to this perspective, the problem that causes the ghosts in the system is the production of order-words, or redundant instructions that sit between the act and the statement. These order-words are incorporeal transformations (pp. 108-9) that take on board power and life and circulate around institutions and places of education like the routing of electricity in plasterboard walls. Later in *One Thousand Plateaus*, Deleuze & Guattari (1987) go further in explaining the actions of the collective assemblage

by introducing the machinic phylum that develops as locations of intensity for the order-words: it is “materiality, natural or artificial, and both simultaneously – it is matter in movement, in flux, in variation, matter as a conveyor of singularities and traits of expression. This has obvious consequences: namely, this matter flow can only be *followed*” (p. 409).

We might ask about the relation of the machinic phylum to previous practices. For instance, we saw our ICT teacher building an educational machine to explain transformed ICT practice in the school. However, the transformed practice has not come from nowhere because it involves significant relations to other ICT practice. Here Schatzki’s account of practice is useful. According to Schatzki (1996; 2002) in an important sense practices prefigure individual actions. For him, practices precede particular actors and actions, shaping their performance as well as supplying its meaning and significance in the particular context. So while the transformed ICT practice is no doubt novel, it remains ICT practice and not something else because of the relationships to ICT practice in general. Schatzki (2002) views social activity as “composed of a mesh of orders and practices”, where orders are “arrangements of entities – e.g. people, artefacts, things” and practices are “organised activities” and both of these are present in Deleuze and Guattari’s conception of ‘order-words’.

Ryle’s (1949) solution to Cartesian dualism relied too heavily on the rational subject that could be reduced to psychology and therefore produces ghosts in the definition of the ‘self’. Wittgenstein (1963) resolved the problem of the rational ego through language-games and the argument against private language, yet ghosts appear in unresolved power relationships and the movement into the ‘irrational’. Deleuze & Guattari (1987) give us a way out of this impasse through the construction of a machinic phylum through which order-words may pass and meaning circulate. The rational ego is therefore not emphasised by Deleuze & Guattari, the knowing how and the knowing that are immanent to the processes that are under investigation in the machinic phylum. A diagrammatic representation of this argument towards learning-practice may be drawn thus:

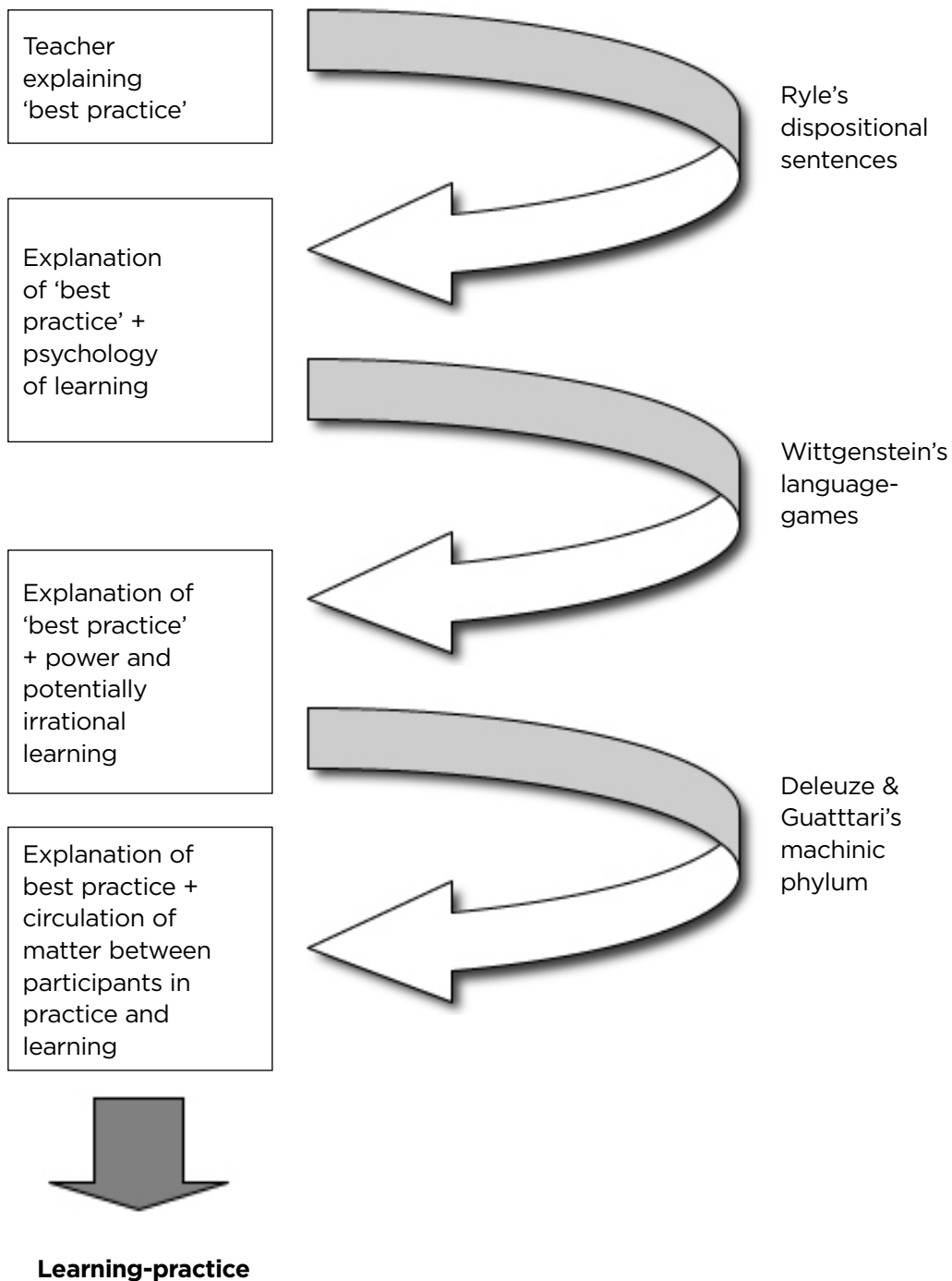


Figure 1. The argument contained in this paper from an explanation of best practice to learning-practice

The Machinic Phylum *per se*

For Deleuze & Guattari (1987) novelty emerges from within systems rather than being imposed from without, i.e. hylomorphism. This is illustrated by their metallurgy example. For a blacksmith “it is not a question of imposing a form upon matter but of elaborating an increasingly rich and consistent material, the better to tap increasingly intense forces” (p. 411). As De Landa (1997) puts it, for Deleuze & Guattari “the blacksmith treated metals as active materials, pregnant with morphogenetic capabilities, and his role was that of teasing a form out of them, of guiding, through a series of processes - heating, annealing, quenching, hammering, the emergence of a form, a form in which the materials themselves had a say...he is less realizing previously defined possibilities, than actualizing virtualities along divergent lines” (p. 4).

In expounding their notion of novelty emerging from within systems, Deleuze & Guattari deploy the key concept of the ‘machinic phylum’. As De Landa explains, the machinic phylum serves to “conceive the genesis of form – in geological, biological and cultural structures – as related exclusively to immanent capabilities of the flows of matter-energy-information and not to any transcendent factor, whether platonic or divine, e.g. the hylomorphic schema” (De Landa, 1997). The concept of the ‘machinic phylum’ can be further clarified by considering separately the terms ‘machinic’ and ‘phylum’.

‘Machinic’ refers to the combinatorial diversity of the elements of a system. The more there is diversity and heterogeneity, the greater the potential for novelties to emerge. As De Landa (1997) expresses it, “a crucial ingredient for the emergence of innovation at any level of reality is the ‘combinatorial productivity’ of the elements at the respective sub-level, that is, at the level of the components of the structures in question. Not all components have the same ‘productivity’” (p. 2). De Landa illustrates the last point in this quotation by contrasting the low productivity of sub-atomic particles – yielding only about one hundred different kinds of atoms – with the prodigious productivity of the next level up where combinations of atoms yield seemingly uncountable numbers of different molecules. This combinatorial richness, which favours emergence of novelty, is enhanced by both heterogeneity of components and by the presence of processes that enable heterogeneous elements to combine. For Deleuze & Guattari, “what we term machinic is precisely this synthesis of heterogeneities as such” (1987, p. 435).

The second term of the Deleuze & Guattari key concept of the ‘phylum’ connotes the processes of self-organisation or the idea of a common body-plan which through different operations, for example, embryological foldings, stretchings, pullings, pushings, can yield a variety of concrete designs for organisms or systems. For instance, while there is a huge diversity of actual body instantiations in the animal kingdom, these are variants on a common body-plan – head, limbs, torso etc. But Deleuze & Guattari are proposing something even more general than this. De Landa (1997) comments that it is “[a]s if one and the same material ‘phylum’ could be ‘folded and

stretched' to yield all the different structures that inhabit our universe." So they envisage an 'all-purpose' phylum. The main upshot of this discussion is that the concept of 'machinic' phylum conjures up ongoing novelty but with recognisable continuity – like ever more intricate variations on a theme.

Vocational Education

What do the machinic phylum and argument to learning-practice suggest for vocational education? Broadly, in formal education systems there has been increasing moves to implement a centrally mandated curriculum. In the terms of Deleuze & Guattari (1987), this is the imposition of form from without onto classroom processes. A similar trend has been evident in vocational education. Up until the 1990s it was common for VET curricula to be decided by current teachers, as experienced practitioners, in conjunction with advice from curriculum specialists. However, from the late 1980s central governments started to implement national training reform agendas. A prime strategy of this reform was the establishment of industry-based work or competency standards. These competency standards were supposed to encapsulate the standards of work performance required by industry. Since then, they have become the exclusive basis for development of vocational curricula. Clearly this represents a strong instance of external imposition of form in the Deleuze & Guattari (1987) sense.

Various limitations of the competency standards approach to VET have emerged though their use continues apace. Firstly, they have been assumed to render clear and uncontested what is involved in performance within an occupation. It is true that performance levels on specific tasks can be rendered as precisely as desired. However, besides describing performance, competency standards typically say something of the skills and attributes that underpin performance. Inevitably, the specification of human skills and attributes has nowhere near the clarity and precision of the specification of performance levels. Much remains tacit. Quite simply, the exact nature of human skills and attributes is both contestable and contested (Hager, 2004). So, unwelcome ghosts continue to haunt the machinery of competency standards.

A second major limitation of the competency standards approach is its assumption that it is essentially individual practitioners who perform work. Thus, virtually all competency-based VET courses focus on teaching and assessing individuals. Meanwhile, various trends in the workplace are taking the focus of work off performance by individuals. Co-operative modes of work in which workers skilled in a given occupation collaborate in the co-production of projects or sets of outcomes are increasing. Here the team uses its joint occupational capability to accomplish work that would have been beyond the capacity of a single practitioner. As well, there has been growth in inter-occupational practice in which workers from diverse occupations collaborate in the co-production of projects or sets of outcomes. Here, the workers, as well as drawing on their traditional expertise, also need to extend their capability beyond the normal bounds to contribute to work that does not fit neatly into any traditional

category. Such practice is increasingly called 'boundary crossing' (see, e.g., Tuomi-Gröhn & Engeström, 2003). A further variant on inter-occupational practice involves cases where clients join the team to work as co-producers of the desired outcomes.

A third major limitation of the competency standards approach is its claim that standard descriptors can capture the essence of skilled work irrespective of the diverse contexts in which the work occurs. The significant contextuality of much work means that, although workers have been assessed as competent against the generic standards, they still need further learning to be able to perform at the required level in unfamiliar workplaces. Conversely, competency-based courses cannot produce graduates that are fully workplace competent (Hager & Smith, 2004).

The second and third of these limitations are partly behind the increasing interest in workplace learning, whereby the focus is on learning from practice, as against learning from formally accredited courses. Previously the operative assumption had been that all of the learning needed for successful workplace practice could be delivered by properly planned and delivered formally accredited courses. If there was a problem that graduates of courses were not ready for workplace practice, the obvious remedy was to revise the courses, i.e. the remedy was an external curriculum issue. However, the realisation has gradually dawned that, no matter how meticulous the preparatory course, some vital learning for practice can only occur by engaging in practice. The second and third limitations of competency-based curricula point to the inescapability of some vital workplace learning. These two limitations of the competency standards approach may also be illuminated further by the Deleuze & Guattari (1987) concept of the 'machinic phylum' and learning-practice. In both cases, the limitation stems from the idea of 'form being imposed from without' being inapplicable, since novelty arises from the diverse and heterogeneous nature of workplace processes themselves.

A recent case study of learning in the workplace can serve to test the usefulness of the Deleuze & Guattari (1987) ideas for illuminating this kind of learning. This case study investigated learning within a multi-faceted initiative of the Sydney Symphony Orchestra¹ that serves both to initiate outstanding young musicians into professional orchestral practice and to satisfy the orchestra's important obligations to present educational programmes for both children and adults. This multi-faceted initiative of the Sydney Symphony Orchestra includes two complementary educational programmes intended to provide experiential learning opportunities for two segments of developing musicians: the *Sinfonia* Programme for existing tertiary institution students and the *Fellowship* Programme for recent graduates. Entry to both programmes is highly competitive. In the *Sinfonia* Programme, students prepare for selected adult theme concerts (called 'Discovery Series') and school touring concerts and are mentored throughout the year by professional musicians from the Sydney Symphony who form part of the *Sinfonia* Orchestra with the students. The *Fellowship* Programme is a more rigorous professional development programme for six individuals and involves master class training, mentoring, tutoring of school children; performances of chamber

music concerts, and Sinfonia concerts; and casual employment opportunities with the main orchestra, as well as a modest stipend. (Our case study included both the Sinfonia and Fellowship Programmes. For simplicity, from now on in this paper we will use the term ‘Sinfonia Programme’ to cover both programmes).

This case study uncovered multiple kinds of learning that are achieved in the Sinfonia Programme, kinds of learning that, in many cases, it seems can only be gained from context-sensitive participation in real orchestral practice. The difference between previous learning and that gained from the Sinfonia Programme was reflected in a tension between the kinds of solo competitive technical skills and musicianship needed to gain entry to the programme, and the completely different group emphasis of the programme itself. This surfaced continually as participants contrasted their Music School² experience with that of engaging in the Sinfonia Programme. As one experienced musician explained, the transition from music school to a full professional musician is in some ways a small step, but it is also:

....[I]like a giant sieve; you’ve got all these brilliant violinists if you like at the Conservatorium. They can all play concertos standing on their heads from memory, you know, since they were twelve probably. Yet the ones out of all those who can pull their heads in enough to play in an orchestra are very few. It’s not always the absolutely star players that will get through to us. So it finds those players that aren’t necessarily going to win the concerto competition but they will be fabulous orchestra players, gets rid of all the ones that everyone thinks are the best – I’m not saying we don’t get the best – but it’s a very specific skill playing in a group as opposed to playing a concerto or winning a competition. So yes, we find those players and out of those, we find the ones who really have their brain connected in the right way

The Sinfonia Programme involves a team of strongly committed core mentors plus a rotating roster of week-at-a-time mentors. All are drawn from the Sydney Symphony. As the Sinfonia prepares for its concerts, the situation is one of more experienced peers guiding less experienced peers. However, participants frequently stressed how this peer mentoring in the Sinfonia Programme was quite different from the dyadic master-pupil mentoring commonly employed at Music School.

One of the seasoned mentors contrasted teaching at Music School (‘1-to-1 lessons’) with teaching in the Sinfonia Programme as follows:

I do it by *not* telling them what to do all the time. ... I just hope that they pick it up ... and they do, most of them ... Of course in 1-to-1 lessons, I do nothing *but* tell them what to do ... then that’s the big difference between teaching 1-to-1 and teaching in a more professional kind-of setting. I mean they’re getting paid to be there ... not that much ...but they’re getting paid and we’re performing to people who have paid money, either in the Discovery Series or the schools concerts, even the kids they’ve paid to be there. And they are training to be professionals. A lot of them are already working in other situations or even with us – some of the better ones have already got some work with us – and so it gets very blurred where we’re up to. Am I still able to tell this person that they’re sharp or flat, too loud or whatever, or should they know that by now? It’s not like I set traps by not saying anything ... but it really is important by that stage for them not to have to be told too much. But they listen and pick things up.

Mentors acknowledged their own valuable learning from the Sinfonia Programme, describing it as more of a “two-way street” compared to the more “one-way” direction of mentoring at Music School. This is learning from within the practice itself, rather than from without (deliberate teacher transmission).

The Sinfonia Programme provides a holistic practical kind of learning that participants argued was virtually unattainable at Music School. Recalling Music School and contrasting it with the Sinfonia Programme, one student observed:

... I had no idea – in a one-on-one situation we’d be talking about these, what they call orchestral excerpts. We’ll play a brief fragment from what happens in the orchestra and then you get told about what the orchestra’s doing, you go away and you listen to a recording of what it sounds like. You try to prepare but it’s a very sort of sterile sort of process. So when you actually sit in the orchestra then and play these things that you’ve been practising... ohhh, I understand *now* why this has to be soft, I understand *now* I have to articulate here.

The difference here is partly logistical:

... a lot of good Music Schools will get the whole, say, brass section together and run some excerpts from that symphony as a brass section. But there again, you can get a whole feeding frenzy happening where, you know, the First Trumpet might be a really loud player and you try to play up to that instead of having a conductor out the front saying: no, you’re too loud for the strings and the winds. You only learn that, when you are actually *in situ*... I guess you can learn a lot about the theory and about your own instrument in a lesson and that’s important. But I think when it comes right down to ensemble playing, there’s really only one way: you really have to suck it and see...

However, the difference is more than logistical since Music Schools can and do run their own orchestras drawn from their students. A very common theme in the interviews was that the relatively low standards of these Music School orchestras meant that participation in them taught as many bad habits as good ones. One student commented as follows on this:

... you probably learned all your worst habits when playing in orchestras at school ... Because they haven’t had professionals come in and give them a clip over the ears when they weren’t coming into line and stuff like that. It’s about trying...it’s a lot more competitive when you’re young actually. You want to show you’re better than other people and you’re going to make it. That’s how I interpret it at least.

(Interviewer): So that means you might, say, have violinists competing against one another rather than just playing ... showing off, yes.

Yes, just showing off. Trying to play the loud hard bits; they would try to play it louder and faster and cause the music to be reasonably unsettled and just a general disturbance. Whereas the way I feel about playing in an orchestra now is that there’s always enough time to interpret every bit of the music at one point. It’s never too fast, and I think that professional musicians are always aware of this so they always understand what’s going on and it’s always comfortable (not necessarily the right word) but they are always aware of every aspect of

the music at one point. And they never overplay their instruments, which is what younger people do all the time – play too hard and kill the instrument sound...

In Deleuze & Guattari (1987) terms, the high professional standard of the Sinfonia Programme enabled learners to actualise virtualities or rhizomes that were simply not available in the Music School orchestra experience. As one student put it:

..... in some ways, it is much easier to play in a group with really fantastic players, because you are encouraged, or forced in a positive way, to come up to their level. So I think you actually learn very quickly in a professional environment, possibly faster than other things (Interview 4, p. 2).

Here learning emerges creatively and unpredictably from the situation itself, rather than being specified and planned in advance. It seems that such tacit learning is vital for making a successful transition to being a professional orchestral musician:

..... someone can give guidance by just being there – it's kind of a mental moral support. Because music is a lot about communication, you can actually improve by copying someone by watching them from the corner of your eye. Just as much as if someone was sitting there and giving you instructions.

(Interviewer): So they don't necessarily have to verbalise it or say something in words.

No. I mean, that's a big thing with things like Sinfonia. The fact that you can see what someone's doing through the corner of your eye, it makes you adapt to their way.

(Interviewer): Through their body language?

Body language, through what you hear, everything. So you know, a lot of it is visual ... and aural – that's a big thing.

It seems that this tacit learning, that is such a feature of the Sinfonia Programme, can only be achieved by immersion in the actual professional practice that is the core of the programme. As one student aptly commented: "a lot is expected to be learnt by osmosis".

The Deleuze & Guattari (1987) idea that innovation and novelty are encouraged by combinatorial productivity is also resonant with several key features of the Sinfonia Programme. One of these is the need for group cohesion, within the orchestra as a whole but also within the many sub-groupings that comprise it. By its nature, an orchestra demands that individual preferences of playing be subordinated to the achievement of group cohesion.

An experienced principal player outlined what was involved in Sinfonia students adapting to the group role:

Group playing involves relatively boring but practical things like coming in at the right place, not screwing up the solo, and it might not be as hard as anything you might play at home

practising – but yes, fitting in with the tuning, the intonation and the ensemble and getting along with people. Not, you know, picking ‘musical fights’ if you like, not playing different to other people or louder or whatever, just because you think you’re right...

... you’ve got to put your ego to one side as an orchestral musician, even the Principals (to a lesser extent because they do more solo playing within the orchestra) but for the Sinfonia, they’re not really allowed to have too much opinion of their own in that situation because nobody is going to follow them, I’m not going to follow what they do, they’ve got to do it *my* way, but that sounds awful to say it. It’s just a general realisation that you put your own ideas to one side. And you do what everyone else does. And if there’s a disagreement, that’s fine and then you say: oh, I think this should be such and such. Most of them are too respectful to argue (thank god) and there isn’t time to do that in the schedules that we do – there’s a 1.5hr rehearsal and you’re on ... and there’s no time for negotiation about who’s right and who’s wrong and most of them pick that up immediately... You could write two lists: what’s a priority in a soloist and what’s a priority in an orchestral player and they’d come out in a different order. At the top of the list of orchestral would be *rhythm* and then next *intonation* and then next, all kinds of things about how to be adaptable to different styles of music and different conductors; to be able to do what you’re told, and actually understand what you’re being told. A soloist, I don’t know, they can get away with murder and everyone thinks they’re wonderful. They can play out of time, out of tune but if it’s brilliant, fast, flashy ..., exciting, it’s fine. It’s pretty rare to find someone who can do both. I suppose the closest you’d come in that way, would be the concertmaster who has to play a lot of solos and the occasional concerto. But even that’s hard to get right and the other principals – like the Principal Flute, Clarinet whatever, they’ve got to be soloists to a large extent but also be able to fit into an orchestra.

Clearly, achieving an overall harmonious, polished sound is an outcome of many individual players and groups of players making appropriate judgements or “combinatorial productivity”. Here is how one student viewed this situation:

Even playing in tune, if you think you play in tune on your own, once you’re in an ensemble, (a) because everyone has a slightly different idea of pitch, but also (b) just depending on which part you’re playing as well, you have to fit various parts of the chord. You might have to play a note slightly higher or slightly lower just to make the chord work. So it’s learning things like that. Everyone has their own musical expression so yes, getting used to those, trying to get a sound that blends. Some people have a brighter sound, others have a darker sound. Some vary more than others.

This discussion suggests that, though the printed score can be viewed as an external imposition of form on the performance of a piece, nevertheless there is much scope for novelty and creativity in the ways that the orchestra realises a performance of the score. In an intelligible sense no two performances are ever the same. Novelty emerges from within the orchestra, from the judgments and actions of the players in the course of any given performance. The Deleuze & Guattari (1987) notions of novelty and variation within broadly repeated patterns are salient here.

However, the orchestral player’s recognition of the need to adapt and capacity to judge how to adapt is not restricted merely to adapting to other players or practices within the orchestra. There is also a wider context, including the conductor (often a visiting guest), the concert venue³, the particular orchestra that is performing in the

venue and the actual size of the orchestra for performance of a particular work. All of these can influence how the orchestra handles aspects of performance that are not specified in the score. A principal player illustrated some of these contextual aspects of performance as follows:

In terms of the Tchaikovsky [a piece that the Sinfonia was playing in a Discovery Concert the evening after our interview], early in the week, before we even started, I said to the other guys, normally when we play this (and they understood) it would be a much bigger string section. Then I said: what we want to do is to get really nice definition and maybe to just cave the sound just a bit on each note so that there's not this massive sound and also being in quite a live hall... so that was something specific and pertinent to our instrument. Because there's a couple of different ways you could play it without them being too much of a musician ...well you could play softer; does that mean you play with a softer attack as well? So you know, without that definition on the front of the note, suddenly it becomes a completely different experience out the front. It becomes a sort of dull sound; it's not exciting and energetic any more. So and those are the sorts of things you learn over time and just listening to recordings and performing yourself.

(Interviewer): Because you wouldn't get that by looking at the score.

You wouldn't have a clue ... and there are a few... in Tchaikovsky in particular, there are always ... you know this particular phrase, you might crescendo to the end of the phrase; start less then crescendo to the end of the phrase: it's not written. But everybody does it that way, you know...

... Or sometimes we'll play something and it might be *my* preference that we shape the phrase to the middle then away. And it's a very small detail and it wouldn't normally be, you know. You might say to the section: let's try it and if the conductor pulls it up, we won't do it. And that's the other thing: you're really dependent on the conductor's view on a lot of these things. So if the conductor wants less, you have to play less; if the conductor wants more, we have to play more, no matter what our personal feeling is about it.

The same principal player also provided interesting examples of the influences of wider contexts such the particular orchestra, concert venue and size of orchestra:

... one size doesn't fit all. You can't say: this is how we play Bruckner; it's like this is how we play Bruckner with an orchestra *this* size ... and the next time might be a bigger orchestra or it might be something else. ... We have a bigger orchestra [for tomorrow's concert] – normally the orchestra is ... smaller ... it usually depends on size of the string section; so the bigger the string section, the more it's like you know a *real* orchestra. And so for the brass section in particular, they get the chance then to actually play it at the dynamic that they're expected to play. Whereas normally we're saying: look for this size orchestra, we're probably a bit too loud, let's just tone it back a bit.

...the size of the orchestra ... has implications too in a professional environment because you might get to play a Dvořák Symphony with Sydney Symphony Orchestra in the Opera House, which is a big hall; you'll probably have a bigger orchestra. And then you know, if you're a young player and you don't have a job, and you're in demand for casual work, there's a good chance you might then play it with Tasmanian Symphony Orchestra the next week, which is a smaller orchestra in a smaller hall. So you have to be able to adapt the way you play the same repertoire to different situations.

Overall, this case study has provided many clear examples of the rich learning that essentially stems from practice alone. Orchestral musicians are required to creatively respond both as a group, and as groups within the larger group, to engage in self-organising processes in order to evolve appropriate solutions to diverse and multi-faceted challenges. The practice of orchestral musicians also illustrates clearly the three defects of competency-based attempts to regiment vocational education from without. The three defects of this approach are:

- Much of what underpins skilled performance remains inexplicit and tacit.
- Performance is conceived in overly individualistic terms.
- The significant shaping of performance by context is overlooked.

The work of Deleuze & Guattari (1987) and the outline for an argument to learning-practice suggest richer and more informative ways of thinking about work performance and ways to prepare people for work. This is because figures such as the machinic phylum and the argument about ghosts in the education machine show creative and complex ways of learning. Far from being the exceptions to the rule, the argument here is that these ways of working constitute the material and multidimensional facets of learning. It is interesting that in the example above the orchestra effectively rules out ‘telling and being told what to do’ as an appropriate way of working. This is in line with the order-words that come from Deleuze & Guattari’s explanation of the collective assemblage. Whilst language constitutes practice in that we have to explain what we are doing, the use of instructional formats such as orders soon become redundant. Contrariwise, the collective is often defined by what escapes language, and the argument to learning-practice gives us an idea as to how this might happen through ghosts in the education machine.

Conclusion

This paper has developed an argument to make the conjunction learning-practice that ends in the machinic phylum taken from Deleuze and Guattari (1987) but does not diminish the importance of Ryle (1949) or Wittgenstein (1963) as precursors in this area of inquiry. It is hoped that this philosophy of education work presented here will help to illustrate further educational interests as has been demonstrated through vocational education in the case study above. This conjunctive synthesis of philosophy and education may also act as an underpinning for further work in developing this field such as the ways in which affect theory (Probyn, 2004) may be used in educational research and theorisation, as the argument presented in this paper acts as an epistemological grounding for the socio-cultural application of theory to practice and vice versa. The ICT teacher should be able to apply the ideas here to his or her example of ‘best-practice’ to enable them to articulate the conception of learning-practice in their particular frame and to take away some of the pressure of the appearance of ghosts:

...ghosts in machines always appear as malfunctions, glitches, and interruptions in the normal flow of things. Something unexpected appears seemingly out of nothing and from nowhere. Through a malfunction, a glitch, we get a fleeting glimpse of an alien intelligence at work.

Vanhane (2001)

The ghosts in the education machine are to this extent the passwords and portals to understanding the ways in which learning and practice may be joined together. Once they have been understood, educational processes may be joined together to make clear routes from best practice to the actualisation of this practice, as has been addressed above in the case of an orchestra. Far from being a 'scary nuisance', ghosts in machines are vital signs of life beyond the everyday, and they show us how the machines function in a non-literal and collective sense.

David R Cole works as a senior lecturer at the University of Technology, Sydney, where he lectures in literacy and pedagogy. He has published in international journals such as *Educational Philosophy and Theory*, *Prospect* and *Education and Power*. He edited three books in 2009, called, *Multiple Literacies Theory: A Deleuzian Perspective* (Sense Publishers) with Diana Masny, *Multiliteracies and Technology Enhanced Education: Social Practice and the Global Classroom* (IGI Publishers) with Darren Pullen, and *Multiliteracies in Motion: Current Theory and Practice* (Routledge) with Darren Pullen. He published a novel in 2006 called *A Mushroom of Glass* (Sid Harta). David uses his knowledge of multiple and affective literacies to investigate areas of social interest. He is currently researching young Muslims in Australia, and recently arrived immigrant families in NSW.

Paul Hager is a professor of education at the Faculty of Arts and Social Sciences at the University of Technology, Sydney. His main scholarly interest is the emerging field of philosophy of adult and vocational education. His work centres on topics such as informal workplace learning, professional practice and the role of generic skills in work, and he has led a range of research projects in these areas. His most recent books are P. Hager and J. Halliday (2006) *Recovering Informal Learning: Wisdom, Judgement and Community* (re-issued as a paperback in 2009) and P. Hager and S. Holland (eds.) (2006) *Graduate Attributes, Learning and Employability*, both published by Springer.

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Endnotes

- i This case study was carried out by Paul Hager and Mary Johnsson (see Johnsson & Hager 2006). The Sydney Symphony Orchestra has given us prior permission to release their identity as participants in our empirical case study research.
- ii Interviewees studied music at variously named institutions, such as 'Conservatorium of Music', 'College of the Arts' etc. Except where interviews are directly quoted, we will employ the generic term 'Music School'.
- iii Mostly the Sydney Symphony Orchestra performs in the Concert Hall of the Sydney Opera House, whereas the location for the Discovery Concert Series is normally the City Recital Hall at Angel Place, a much more intimate venue.

