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# Knowledge in education

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Why philosophy matters

An inaugural professorial lecture

Jan Derry

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**Jan Derry**

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## Biography

**Jan Derry** is Co-Director of the Centre for Philosophy at the UCL Institute of Education (IOE). The mission of the centre is to address practical questions in education. When these questions are pursued rigorously, they invariably lead to philosophical enquiry into the nature of knowledge, the characteristics of the just society and the nature of the good life.

Jan's own research focuses on philosophical psychology, the connection between epistemology and pedagogy, and the nature of professional expertise and judgement. She has published widely, particularly on Vygotsky and Brandom. Her work on inferentialism indicates the way the centre connects with other research centres in and beyond UCL.



# Knowledge in education: Why philosophy matters

## Introduction

As many if not of all of you here will know, there is intense disagreement in education circles, between those who favour facts and disciplines, on the one side, and those whose main concern is 'meaning-making' and epistemic access, on the other. This echoes a 50-year-old debate in which the UCL Institute of Education has played a central role. Among those involved were the sociologists, Young, Whitty and Bernstein; educationalists in the field of English teaching, Britton and Rosen; and the philosophers of education, Peters and Hirst. Today the debate has different political dimensions: on the one side, nostalgia for instruction of disciplines; on the other, the unqualified conviction that education should involve individual expression. My aim here is to question the limitations of these views by examining knowledge: both schools of thought have this as their goal but neither systematically examines what it is. In other words, my aim is to address the question concerning education philosophically. Among many issues this raises is the question of meaning.

How does meaning come about? How is it that words can represent things and thoughts and make sense to others? Of course, we are familiar with the idea that the meaning of words changes over time and with context. The word 'wicked' was commonly used to refer to evil, now it is used to mean superb. But how does meaning develop? And how – the crucial question here – does it relate to understanding?

## Meaning: The peculiar ability of letting one thing stand for another

Wittgenstein addresses the question of what it is to mean something through an instruction to teach children a game: 'Someone says to me, "Show the children a game". I teach them gambling with dice, and the other

says, "I didn't mean that sort of game" (Wittgenstein, 2001: paragraph 70). Is it necessary for the thought that gambling is excluded to be present when the instruction 'show the children a game' is given? Similar questions are fundamental to education because, in the absence of a carefully considered meaning, the result may be the rote learning of meaningless terms without understanding.

The physicist Richard Feynman tells of being teased as a child for not knowing the answer to the question 'what kind of a bird is that?'. Yet he could recite twenty names for the bird in different languages: 'Well, in Italian, it's a *Chutto Lapittida*. In Portuguese, it's a *Bom da Peida*. In Chinese, it's a *Chung-long-tah*, and in Japanese, it's a *Katano Tekeda*. You can know the name of that bird in all the languages of the world, but when you're finished, you'll know absolutely nothing whatever about the bird,' he said (Feynman, 2001: 4).

What, then, is involved in 'knowing the bird'? Feynman provides an interesting account of his own approach to what is knowing in physics. He explains that he 'refuse[d] to know the name of anything', so if someone asked him whether he had any explanation for the 'Fitch-Cronin experiment' he wasn't initially aware of what they were referring to. This makes us think about how he approached knowledge. It was as though he was only interested in meaning, in what connects names with each other, how they function, but not what label is given to them. It seems that his interest lay in how words *come to stand* for what they represent. Although he recognized that knowing the name of a phenomenon is necessary for communication, his focus was elsewhere. What is it that he was getting to grips with in the absence of names for things?

Feynman understood that the meaning of words and concepts can only be understood through relations. Put this way, even when expressed in simplified terms, this brings out an important feature of meaning. Although a representation may appear to convey meaning on its own, there is always something prior to it that makes understanding possible. As I will go on to explain, these are the *inferential* relations that connect concepts, enabling representations to represent.

When he discusses *inferentialism* (the philosophical idea informing my lecture), Peregrin asks how is it that 'we have the peculiar ability to let one thing stand for another'. He continues: 'how we do it – and what the relationship so established consists in' is 'very difficult to explain, in a non-mysterious way' (Peregrin, 2014: 1). Yet how we do this is central to education: how do we convey meaning? What knowledge form should be taught? How do students access meaning and how do they make sense of what is meant?

For Robert Brandom, the philosopher whose work has most influenced my argument here, the distinctive characteristic of humans, of giving and taking reasons, is central to any account of meaning and being in touch with the world.<sup>1</sup>

Brandom illustrates his argument by contrasting a parrot squawking 'red' in the presence of red objects and a human reporter (Brandom, 2000: 48). We could compare the parrot with a young child saying 'red'. Unlike the parrot's response, the child's response involves reason as she situates the concept 'red' in a network of other concepts. She knows that in uttering the word 'red', neither blue, nor yellow nor any other colour is entailed. In Hegelian terms, the red is determined by the *negation* of blue and yellow. It is delimited by what it is not. While the parrot's response is restricted to the red object, the child is responsive to those determinate relations despite not knowing much about colours.

So, what is this responsiveness? What does it involve and how does it come about?

Brandom's colleague at the University of Pittsburgh, John McDowell, calls it a 'good gloss on one notion of freedom' (McDowell, 1996: xxiii). This is a more powerful statement than it appears. It refers to something about our relation to the world that makes us free rather than being tied to a specific niche; it enables us to produce not only our own environment but also art, literature and science. Even more than this, it allows us to bootstrap our intellects. This is what makes education so important.

## The return to knowledge: Facts?

For policymakers an important feature of contemporary education is a lack of serious attention to knowledge. Thus, they deprecate the attention given to meaning-making and advocate a 'return to knowledge' as a priority. But what they mean by knowledge is unclear and it is precisely this problem that is considered here.

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1 Brandom sees his own theory of *inferentialism* as expressing Hegel's '*Science of the Experience of Consciousness*', the original title for *The Phenomenology of Spirit*, tracking the phenomenology of our orientation in the world. His connection to Hegel shows that his project is an ongoing working through of the philosophic tradition that has been excavated over centuries. The issues here are not limited to the contemporary, they are reworked throughout history.

The author whose work is central to the issue is E.D. Hirsh, renowned for his focus on facts. He argues that memorization is valuable and that young children love learning facts. In his early influential work *Cultural Literacy* (Hirsch, 1988: 30) he argued that many students had been deprived of crucial knowledge that should be emphasized in teaching. He used the phrase 'core knowledge' to capture the significance of what he believed needed to be taught. His influence has not been restricted to North America – he encouraged the British government to put knowledge at the centre of education.

This might not seem unreasonable. Surely schools are concerned with imparting knowledge. But things are not so straightforward, as the conception of knowledge is not clearly defined. What presuppositions enter into thinking about knowledge? Facts may seem to be just that – a fact is a fact. Clearly when we state a fact, our utterance *stands* for something. The statement 'it's hot' refers to the temperature. It stands for a state of affairs – the temperature in the room. If it is a fact, rather than simply an opinion or even a belief, it will have been accepted as such.

Thomas Kuhn, in the foreword to Ludwig Fleck's 1935 monograph, *The Genesis and Development of a Scientific Fact*, reports one reaction to the title of the book: 'a fact is a fact, it has neither genesis nor development' (Kuhn, 1981: viii). But this claim is misleading. Many facts have a history, and this is relevant to how learners access them. Simply memorizing them stops well short of understanding them.

There are two important issues concerning facts in the current debate. The first concerns the value of learning facts without understanding them, and the second relates to teaching the form of knowledge needed to understand them.

Yandell, reacting to the emphasis placed on facts by government ministers, questions the idea that learning can involve the 'ingestion, or appropriation, of specified gobbets of intellectual capital' (2017a: 249–50).<sup>2</sup> Drawing on a rich vein of work challenging notions of standard English by stressing the logic in non-standard English, Yandell questions how the knowledge prescribed for the school curriculum can be considered common to all: 'by some process of alchemy, knowledge simultaneously belongs to all and becomes the property of individuals' (2017a: 250).<sup>3</sup> The question becomes a

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2 Yandell makes this comment in connection with the Brazilian educator Paulo Freire's (1972) characterization of the 'banking model' of education.

3 This apparent paradox ceases to exist if an inferentialist approach is adopted, in that knowledge and learners' responses to knowledge are understood as dynamic.

problem of knowledge rather than *how* knowledge is conceived. It leads to the ‘Whose knowledge?’ question, which contests curricula on the basis that they serve the interests of the powerful. Michael Young argued for the need to move away from the ‘whose interests’ question and used the expression ‘powerful knowledge’ to consider how knowledge is conceived (Young, 2013; Young and Muller, 2016). Despite Young’s own resistance, the expression is often connected with Hirsch’s core curriculum – the knowledge that Hirsch argues is essential for everyone. It is here that a problem related to knowledge lies: the discussion is insufficiently fine-grained, and the issues implicitly recognized by authors are not brought out into the open.

If we turn to those concerned with government policy, such as Gibb, we see a reaction against using lessons for ‘meaning-making’ (Gibb, 2012). Gibb questions whether this is an effective use of lesson time. His arguments are supported by Kirschner and his co-authors (Kirschner *et al.*, 2006) who argue that inquiry learning, the pedagogic approach that places emphasis on the learners making their own sense of material, is doomed to fail. However, the reasons that Kirschner provides for this failure are related to cognition and specifically to the limitations in short-term memory. My reasons are different, though not unconnected,<sup>4</sup> and relate to the fundamental question of how it is that we are able to let one thing stand for another in the first place. To illustrate my point, let us consider an example that, on the face of it, appears to support Gibb and Kirschner’s criticism of an emphasis on meaning-making. The example comes from a religious education lesson. The topic of the lesson was the Bible, and the aim was to foster understanding and appreciation of the practices and beliefs of different faith communities.

To assist students in understanding what the Bible is and how it functions, the lesson was designed to get students to make some sense of the Bible for themselves by being asked to *construct* a bible of their own and in doing so to use headings from a list that include titles such as ‘laws’ and ‘prophecy’. The teacher attempted to create conditions where students could ‘learn by doing’. However, the children made different ‘bibles’, including a fashion bible in which the concept of ‘law’ was illustrated with fashion pictures and accompanied by rules about the age at which it is acceptable to wear certain items of clothing. The concept of prophecy in this fashion bible became

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4 Inquiry approaches fail if learners are not given access to the relevant inferential domain in which to make sense of material in the first place. This is not a simple matter and requires careful thinking about the interconnection between pedagogy and knowledge.

predictions of the financial viability of particular clothing shops and whether or not they would survive.

It is understandable that a teacher should try to stimulate interest in students who are studying an area that may appear meaningless and even pointless to them. In this case, the teacher was attempting to generate interest by moving beyond the mere 'facts' of the Bible to help the students understand something of its religious importance. But in this instance, where meaning-making was emphasized, the students learnt nothing of the Bible. The issue here is 'knowledge' as well as meaning-making.

### **Scientific practice: Significance of a system**

Paul Nurse's account of his experience as a doctoral researcher helps here. Nurse is an eminent geneticist and Director of the Francis Crick Institute, of which UCL was a founding member. He relates his experience of undergoing an intellectual crisis as a second-year graduate student:

that crisis was making me contemplate abandoning my already rather short career as an experimental scientist. I was working on cells ... the basic unit of life of course, but things were not going particularly well. The problem was not carrying out my experiments ... it was deciding what experiments I should do and how I could build on the results of those experiments. What I was doing ... was measuring the levels of different chemicals in cells in a rather random sort of fashion and it was not really clear to me as to why this was important or how it was telling me anything interesting about how cells work. I could not see how to proceed from the data, I was gathering ideas of more general interest about the workings of cells. (Nurse, 2016)

Nurse explains that he was contemplating giving up on his studies and moving instead to the study of philosophy and history of science. For this reason, he started reading Karl Popper's work, whose ideas provided him with a way out of his intellectual crisis. He continues:

The problem was that I was trying to advance my research by first gathering together as much data as I could, and then to look for generalities or patterns from which I could generate a higher-level theory to explain what was happening. I had another difficulty, a

more theoretical one, related to the issue of induction, that is to how to infer from specific particulars to generality ... to make general inferences, made upon particular results.

Nurse appreciated this was a classical philosophical problem most often connected with Hume. 'More practically I could not work out what experiments to do and I was gradually sinking under a mass of data and making no progress, I was getting depressed' (Nurse, 2016). Nurse explains that Popper helped him to see a way out of his dilemma and he quotes Popper: 'Without waiting, passively, for repetitions to impress or impose regularities upon us we actively try to impose regularities upon the world. We try to discover similarities in it, and to interpret it in terms of laws invented by us. Without waiting for premises, we jump to conclusions. These may have to be discarded later, should observation show that they are wrong' (Popper, 1972: 46). He took Popper to be recommending that he should attempt to 'generate a conceptual framework' for understanding the experimental observations through 'intuitive leaps of the imagination'. What was counterintuitive was the idea that the framework should be tested through trial and error, discarded if necessary, but that the important insight was that errors were involved in advancing knowledge. This highlights a significant issue about the relation of a representation to the data that it aims to represent, i.e. the dynamic aspect involved in representing.

Although Popper's method of falsification, of conjectures and refutations, has been subjected to criticism, the use to which Nurse put Popper's method is relevant to the conception of knowledge in education. To avoid viewing data in a random sort of fashion, and to get to grips with what they could 'show' him, Nurse needed *a conceptual system* that allowed him to test how the data functioned in relation to the model he was emphasizing. It was only then that he could make meaning of his data. This account of scientific practice illustrates what is meant by *mediating* activity.<sup>5</sup> The conceptual framework Nurse used went beyond seeing the data representationally, as so many separate instances, to providing *a system of related concepts* through which to make sense of his data.

When Vygotsky discusses the intellectual development of young children in relation to Piaget's arguments he insists that it is only within a system that deduction is possible. Without such a system (and the constraints

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5 Richard Peters explains 'one of the distinguishing features of man is that he alone of all creatures has a variable conceptual framework which determines the aspects under which he acts' (Peters, 1964: 9).

it involves) enquiry is open-ended, vague and ultimately empty. This line of argument is a vital feature of Vygotsky's discussion of concept meaning. At various points in his work Vygotsky rejects a conception of thought as taking a 'representational' or simple referential relation to the world. The point, he stresses, is that the idea of 'general representations' is inadequate to express the role of a concept in thinking: '[W]e must seek the psychological equivalent of the concept not in general representations ... we must seek it in a system of judgements in which the concept is disclosed' (Vygotsky, 1998: 55). It is this idea of a 'system of judgements' that is significant here. In effect, what Nurse is directing attention to is that meaning is constituted via such a system in which the meaning of one concept is dependent on its relationship to others. As Brandom puts it, 'one cannot have one concept without having many' (Marshall and Brandom, 2015).

The idea that to have one concept it is necessary to have many appears to present a learning paradox. How is it possible for a learner to come to know a concept when this knowledge depends upon other concepts that she does not already know? This is a classic problem often mentioned in relation to Plato's Socratic dialogue, the *Meno*. A commonly accepted step in teaching is to break the object of study down into simpler elements. Start with the simple and move to the complex. But given the proposition that the meaning of one concept is dependent on its relation to other concepts, Vygotsky's work suggests a radically different approach. If it were the case of training pigeons to respond to a stimulus, such as the inscription 'turn', then breaking content down into the smallest units would be essential.<sup>6</sup> If initial awareness were restricted to a representation, and only *after* that had been grasped could inferences be made, then it would be reasonable to break knowledge down into units and adopt a 'building blocks' approach. However, human responsiveness is clearly different to that of a pigeon and if the distinctive characteristic of the nature of our contact with the world is not taken into account then we will surely fail to educate. Following Vygotsky, rather than introducing the learner to an accumulation of simple elements, we are encouraged to start by introducing learners to a rich domain in which they can begin to make sense of what follows from what – in which their responsiveness to the relevant reasons and relations that constitute concepts can develop. The reasons for approaching knowledge

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6 The commentator in a film showing a pigeon turning in response to such a stimulus explains, 'You might define reading as the ability to emit an appropriate differential response to written commands. On the other hand, if you saw a pigeon do this you might not' (B.F. Skinner Foundation Video Archive).

in this way, by involving many concepts at the start, is specifically attuned to the human ability to make one thing stand for another.<sup>7</sup>

## Brandom and inferentialism

Brandom was mentioned earlier in connection to the distinction between the responsiveness of a human and a parrot. The parrot simply squawked 'red' on seeing a red object and yet a child, though using the same word, already understands red is not green or blue. A modification of this example of Brandom stresses a distinctive quality of humans. This brings to the fore issues involved in initiating learners into a field of knowledge. Brandom contrasts the response to a fire by a human with that of a fire alarm (Brandom, 1995). Both make a warning sound in response to the fire. At first sight, the human shout of 'Fire' and the shrill ring of the alarm appear the outcome of a causal chain of effects. However, Brandom sees these responses as taking a different form. A child shouting 'Fire!' already has some awareness of its implications. She already appreciates consequences of the exclamation 'Fire!', while the alarm does no more than respond mechanically to physical conditions.

Brandom uses this example to illustrate his argument that what distinguishes the human form of knowing from the type of knowing we can ascribe to a machine, or to a lower life form, consists not just in expressing a response but in our 'mastery of the practices of giving and asking for *reasons*, in which our responses can play a role as *justifying* beliefs and claims' (Brandom, 1994: 89). Unlike a machine, humans have a concept of fire as part of a *system* of concepts. For Brandom, making a report as a human being goes beyond responding differentially. That is to say, humans respond to reasons. The reasons are not arbitrary; they are interconnected with each other within a *system* of concepts. Thus, the meaning of 'fire' depends on its relation to a whole set of other concepts to which the child must be responsive.

The example of 'Buridan's Ass' used by Vygotsky gives further illustration of our particularly human relation to the world and returns us to the idea that we *mediate* our activity rather than simply responding to stimuli. 'Buridan's Ass' involves a donkey faced with two equally sized, equidistant bales of hay, starving as a result of being unable to choose between them. It was used by Buridan to explore an ancient problem of how humans react to situations; in

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7 This involves appreciating the pedagogy required to ensure that concepts are accessible through the inferential relations that constitute them.

particular to whether they act as an object does in response to force, without free will. Vygotsky connects the problem to a literary example from Tolstoy's *War and Peace*, where Pierre is faced with the torturous decision of whether to enlist in the army or remain in Moscow. Vygotsky explains that Tolstoy shows that 'a man who finds himself in a Buridan situation looks for help in artificially introduced auxiliary motives or stimuli ... toss a coin and in that way master the situation' (Vygotsky, 1997: 46). Vygotsky recognizes that the example, though simple, provides an insight into the intellect: 'man himself creates stimuli that determine his response and uses these stimuli as devices for mastering processes of his own behaviour' (Vygotsky, 1997: 49). In Vygotsky's account, by giving significance to artificially instituted stimuli, humans free themselves from the compulsory binding power of nature and attribute significance to external artefacts; dice thrown to make a choice, a knot tied in a cloth to prompt memory, or, more significantly, a written word to evoke response.

In Brandom's evocation of Kant's account of freedom, we have no possibility of acting freely when compelled by physical laws: 'The laws of nature bind us by compulsion.' However, '[t]he institution of authority is human work; we bind ourselves with norms' (Brandom, 1994: 51). Like Pierre, we can make a choice over whether we respond to the calls of duty or to the desires of the heart, by *mediating* our response through what Vygotsky call's auxiliary means, for instance the toss of the coin. It is through our capacity to be responsive to reasons, and not just compelled by external force, that permits our actions to be constrained by norms that we have instituted ourselves. These norms arise from the significance attributed to events, phenomena and so on, resulting from activity but in specific external conditions. For example, I may claim to be a brilliant chess player but if those who I take to be good chess players do not have the same opinion, my attribution to myself of being good at chess fails (Brandom, 2014). Similarly, I may ask a friend to remove the insect while pointing at a spider running across the floor and so long as those around me also refer to spiders as insects it will be clear what I refer to. However, in a more technical context conversing with entomologists then my reference to the category 'insect' will need to be replaced by the correct term 'arachnid' for spiders. Concepts can be correctly or incorrectly applied and what govern the correctness of their application are norms.

As a result of the existence of norms we 'see *as*' rather than simply 'see'. The river as a source of food, the wilted flower as a sign of romance, the sizzling

steak as an animal body part.<sup>8</sup> As Sellars (1997) made clear, there is no simple *Given*.<sup>9</sup> We are *in* the world and therefore come to things according to purposes and circumstances as we transform nature and, in so doing, change ourselves.

The attributions of significance arise in purposive activity. Representations are located in a network of relations bringing ‘what is a reason for what’ into view. Reasons are not arbitrary but arise from a host of activities among communities and their material circumstances, such as activities and practices that define women as witches or physicists, as vulnerable or powerful. We commit ourselves to the correctness of a representation as governed by – what we take to be – its relation to other concepts, even if this turns out to be wrong in the end. The attribution of the concepts ‘witch’ or indeed ‘Brexit’ entail a host of supporting reasons; for instance, that failures are due to magical causes and the only way to overcome them is to remove the individuals responsible for them.

The meaning of a concept varies as the inferential relations connecting it to other concepts change. Vygotsky notes that when a word is first learnt the development of its meaning has only just begun. When we use the word in different circumstances, its meaning is adjusted as it functions in different ways. We become familiar with the norms governing its usage and respond to this usage, going along with it when appropriate, or challenging it when, for instance, school children subvert it. There is a continuous and ongoing adjustment of the relations of concepts to one another and to the world. However, it must be stressed that these relationships are neither arbitrary nor open to wilful change, though they do involve our responsiveness to reasons and the ongoing process of our making explicit what we have implicitly taken to be the case.

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8 According to Wartofsky:

perception is not simply an inward activity, directed upon some ‘mental’ or ‘perceptual’ entities ‘in the mind’ or ‘in the brain’; but is itself a (mediated) form of outward activity, which is continuous with other forms of outward human action in the world; and that even in its most interiorized modes (e.g. in perceptual imagination or dreaming) it is a mode of *virtual* outward action. Therefore, in its very genesis, perception is directly linked to that practical interaction with an external world whose qualities and structures are transformed by human action, and thus, by perception as well; but which transformations are nevertheless transformations of an objective and independently existing environment. (Wartofsky, 1979: 193–4)

9 Rather than experiences involving ‘a vain appeal to the Given, in the sense of bare presences that are supposed to be the ultimate grounds of empirical judgements’ (McDowell, 1996: 24), experiences are conceptually articulated.

To grasp the importance of these relationships together with that of norms and *systems of concepts* it is useful to turn to Yandell again.

## **Knowledge in the abstract**

Yandell (2017b) explores assumptions about knowledge through an account of two periods of teaching practice. The student teacher failed in the first practice. His mentors saw his problem as a lack of knowledge and were apparently unable to help him. In his teaching of Shakespeare, his responses to his pupils were inert and failed to pick up on what they were saying. He seemed unable to draw on any knowledge to support his responses. Yandell is surprised that during the second practice, when the student teacher introduces his pupils to travel writing, there is a dramatic change in his ability to negotiate the classroom. The classroom is alive! But what has changed?

Yandell's analysis is that '[h]is problem wasn't with travel writing, or with Shakespeare ... it was ... not knowledge in the abstract but knowledge in the context of the pedagogic relations of schooling that was proving tricky for him. And the trickiness lay primarily in the pedagogic relations, not in the knowledge (in so far as they are in any sense separable)' (Yandell, 2017b: 588). Yandell relates the difference between the two periods to the student's difficulty being viewed by his mentors in terms of 'knowledge in the abstract' during the first practice. In the second, he successfully engages with 'knowledge in the context of pedagogic relations'. As he points out, the characterization of 'knowledge in the abstract' misses something important. The phrase 'abstract knowledge' has received bad press (Derry, 2008), but impoverished characterizations fail to recognize that disciplines are dynamic and develop continuously. However, this does not mean that they lack the norms or rules that are necessary for engaging with them in the first place. Attention to a field or domain of knowledge entails focusing on normativity; that is to say it entails focusing on the normative constraints that de-limit the matter being taught and govern how concepts function within the discipline.

The difficulty here is not only the lack of fine-grained working out of what is presupposed on both sides of the debate but also the lack of dialogue between the sides. Only dialogue of a philosophical kind, i.e. one that makes explicit what is presupposed in each position, would expose the real areas of disagreement. It is not abstract knowledge but a *representationalist*

*orientation* to knowledge that prevented the student teacher from responding appropriately during his first practice.

Yandell's concern is that knowledge should not be treated as reified, as a possession of an individual removed from the 'social semiotic processes that are implicated in the *production of knowledge*' (Yandell, 2017b: 588; my italics). By putting the issue in terms of the 'production of knowledge', he appears as a representative of the 'meaning-making' side of the debate. He asks 'What, then, was the "knowledge-base" of the lesson? Questioning the idea of "fixed categories of knowledge"', Yandell writes that 'a generic category was being produced through a series of generative activities, each of which was located in, and made meaningful through, *the cultures and histories of the participants – cultures and histories that were, simultaneously, the material that was being worked on and the object of attention*' (Yandell, 2017b: 589; my italics).<sup>10</sup> He is concerned with placing emphasis on the *social* generation of knowledge. The student teacher's knowledge of 'how texts function and how meanings are made and remade' was evident both in his questioning and his directing of his students' attention to how aspects of an advert functioned in relation to its 'persuasive design'. The students' insightful and informed responses, when asked to design their own advert, demonstrated the success of his approach by supporting their engagement with the topic at a deep level. In the presentation of their advert the students were able to demonstrate knowledge of a variety of aspects of language, including different genres.

The idea of 'the social' here requires examination. It is often seen as the exclusive preserve of sociologists, but philosophy has something to offer. The terms in which Yandell talks of the social, at the level of *cultures* and *histories* of the participants, is insufficiently fine-grained. Emphasis on the biographies of pupils and what they bring to the classroom, as a source of the generation of knowledge, is a common theme in constructivism. But to what extent can this account of the social deal with the nature of our responsiveness to reasons or with one thing being able to stand for another? Can it respond adequately to the knowledge question? Does it have the analytic resources to do so? Without them, not only does Yandell's position appear opposed to a case for knowledge made by those concerned with facts, but those concerned with facts have no means to consider pedagogy, or how learners access meaning. What neither

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10 Yandell rejects Schulman's category 'pedagogical content knowledge' for its objectivist conception of subject knowledge, 'as if it were something that is the possession of the teacher to be handed on', and because it 'is still treating such knowledge as existing *outside* the social' (Yandell, 2017b: 589).

side addresses is that a 'normative context is necessary for the idea of being in touch with the world at all, whether knowledgeably or not' (McDowell, 1996: xiv).

The nature of normativity is a complicated philosophical area of research, so I can only touch on it briefly here. Pupils studying English draw upon aspects of their cultural practices and express their own interpretations. But in doing so they draw on language and apply words in sentences according to standards of correctness, i.e. according to the normative rules that govern the application of concepts and so govern a concept's meaning. Applying concepts according to accepted standards of correctness requires that these standards be recognized, though not necessarily complied with. However, if they were not understood then communication would be impossible. But what are these standards of correctness? In an everyday context, according to the standards that apply to the use of the concept of 'insect', it is perfectly acceptable to refer to a spider as an insect, but in a specialized context a different term, 'arachnid', *ought* to be used. The relations between concepts determine how any one concept functions and thus specify the rules for its application.

In Yandell's example of the English lesson, students freely draw upon any resources that are meaningful for them, but in order to function persuasively their crafting of their work must be responsive to reasons that are recognized and shared. Sharing here does not entail shared culture or biography but agreement about what norms are in play. In order to communicate it is necessary for the students to draw on recognized standards of correctness, or rules of application. Regardless of whether or not they comply with or invert or subvert such standards, the crucial point is that they cannot *ignore* the rules.<sup>11</sup>

Emphasizing the significance of rules for meaning, Peregrin explains 'meaning is not a thing stood for by an expression (as representationalists would have it), and nor is it, in fact, a thing at all – it is rather a role the expression assumes vis-à-vis the rules that govern it' (Peregrin, 2013: 1092). Peregrin notes that it does not follow from this conception of meaning that inferentialism can be explained simply as a 'use theory of meaning'. In his words, it is 'not claiming that something is the case, but rather urging that something ought to be the case'. He explains: 'If during a chess game, I say "This is the king!", then what I am likely to be expressing is not (merely) a fact, but (also) an urge – "you cannot move the piece like this, for this would violate the rules this piece is governed

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11 'Any word is meaningful in virtue of being governed by a collection of rules' (Peregrin, 2013: 1089).

by!' (Peregrin, 2013: 1092). It is the inferential articulation – the making explicit what is implicit in the use of concepts in particular sentences – that allows the exercise of reason by the students to understand the topic. In Yandell's case the rules that govern the assertions made by students may well draw upon non-standard English, which, as Labov (1970) argues, is not unconnected with standard English.

The subject matter of English touches the lives of students and because of this it is directly related to the norms in play within the discipline itself. Mathematics does not touch students' lives in the same direct fashion but the normative rules function in a similar way to those that govern usage in English or for that matter any knowledge domain (Meyer, 2016). As regards the concept of number, it can be understood as a quantitative aspect of a set of objects when calculating, for example, that 3 is bigger than 2. But if the concept of number is expanded to include negative numbers, the rules of how it is used are adjusted.

In relation to history teaching McCrory raises the question of what we 'mean when we claim that students *have* historical knowledge' (McCrory, 2015: 37). Students may repeat facts competently but fail to show that they can use what they have learnt: 'substantive information ... is *related* to but not *responsive* to what was actually asked' (McCrory, 2015: 37). Despite a cleverly designed task to encourage students to explain the relative importance of particular causes in relation to a historical event, the dominance of the representationalist mode meant they interpreted the task as restricted to learning the facts instead of developing a causal argument. According to McCrory, the students' reasoning was cut short as they 'assume they understand sentences because they can identify the things in the world to which the words refer' (McCrory, 2015: 38).

To go beyond a repetition of 'facts' students need to attend to what is involved in the terms that they use. In philosophical terms this means committing to the inferential relations that constitute the concepts they are using. Replicating the information provided by the teacher does not require the student to be aware of the commitments involved. McCrory stresses Vygotsky's point that the same words used by student and teacher do not necessarily have the same meaning. It may appear strange, but students can know what the details they have been provided with stand for yet have little knowledge of what follows from them.

She notes the pressure on teachers to 'distort knowledge into its representational guise, severed from its inferentially determined meaning' (McCrory, 2015: 41) and advocates an inferentialist approach that will allow

teachers to provide the conditions in which reasoning can take place. To help students she revised the lesson sequence to reveal the judgments implicit in pupils' thinking. McCrory explains that what students write depends on their own network of inferential relations and the task of the teacher is to influence these relations in a way that develops their conceptual awareness.

These examples are intended to show the role of inferential rules, i.e. norms, in providing the conditions of reasoning.<sup>12</sup> It is only when students are provided with the opportunity to develop their responsiveness to reasons, in particular knowledge domains, that they become able to take up commitments, i.e. to *know* what is being represented and to be able to explore what commitments to particular relations between concepts entail.<sup>13</sup> Indeed, it is only when students have the opportunity to develop their responsiveness to reasons that they can think critically.

Let us now return to the example of the Bible. Students were engaged in meaning-making but what was the context in which this was taking place? Were the concepts to which they were being introduced through the activity of 'making a bible' those of 'prophesy' and 'law', within the normative constraints that govern the role of the concepts involved in religious education? Were they introduced into the *space of reasons* (roughly the conceptual framework or system) in which knowledge about the Bible could arise? Or was their use of concepts shaped by the relations of consumer culture, with the result that their ideas bore little or no relation to the study of the Bible? The task I have used to illustrate the point here is taken from a scheme of work, so the matter doesn't end here. *How* the teacher utilizes the student's 'productions' can make all the difference. If she is attentive to the normative constraints that govern standards of correctness for the area being studied, it is possible that the students' work is made relevant and meaningful by being counterposed to the rules that govern the use of biblical concepts of 'prophesy' and 'law'. If she does this, students will have the opportunity to reason within the subject domain of religious education.

Difficulties will almost certainly arise when knowledge is approached on the basis of the students' construction of meaning, but equally these cannot be resolved by teaching facts unless these 'facts' are situated in a network of inferential relations. Access to these inferential relations can be provided in

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12 As Sellars states, 'to say that man is a rational animal is to say that man is a creature not of habits, but of rules' (Sellars, 1949: 311).

13 As Brandom makes clear, 'in making a claim one is implicitly endorsing a set of inferences, which articulate its conceptual content' (Brandom, 2000: 19).

numerous ways. It may involve how a task is designed, as in the case of the history example, or by the quality of the questioning, as in the example of an English lesson. To underline the point of my argument here, neither meaning-making nor the presentation of facts are to be dismissed. Rather they have to be brought together through an inferential rather than representational orientation to knowledge.

Philosophy is not going to resolve the 50-year-old debate, but it does provide analytical resources for transcending it by reformulating the presuppositions upon which it is based.

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