The doctor and the blue form: learning professional responsibility[i]

Miriam Zukas, Birkbeck, University of London

Sue Kilminster, Leeds Medical Education Institute, University of Leeds

Introduction

The case of junior doctors' early professional learning, specifically learning responsibility, is something of a puzzle for us. Two quotes from our research on doctors will suffice:

> 'It was awful and I think there was like - in the first or second day - this woman collapsed on the ward and she was actually faking it but like I think it just completely got me because it was unexpected. I didn't know what to do really and the nurses seemed to take control and the nurses expected you to be rubbish on your first couple of days.' F4

> 'I was on call on my first day. It was a new hospital. Didn't really know where anything was - didn't know how to order blood tests do anything very much. I got handed the bleep, the registrar had been on nights handed me her passes for the computers - this that and the other - and I was essentially left to my own devices. I was given a tour of the admissions unit and that was about the extent of it.' S1

As these opening extracts show, junior doctors often give frightened (and frightening) accounts of their first days in new professional roles. They talk of being overwhelmed with responsibility, whilst trying to find their bearings physically, clinically and socially (Kilminster et al, 2010, 2011, Zukas and Kilminster, 2012a). And doctors continue to make many transitions during their postgraduate training and throughout their careers: from one place to another; from one specialty to another; from one team to another; from one level of responsibility to another. The first few transitional days and weeks form the basis for doctors' war stories.

Whilst we might accept that such heightened disorientation is inevitable for the most junior doctors, for those outside clinical practice, it is somewhat disconcerting to learn that more senior doctors also describe feeling unsure, ill-prepared, out of their depth, when they move from one level of responsibility to another. There is, too, recent evidence which seems to suggest that patients are at increased risk of harmful occurrences not only during newly-qualified doctors' initial days, with a small but significant increase in patient mortality (Jen et al, 2009), but also when more qualified doctors make transitions (Haller et al, 2009). The puzzle then is that, despite both professional and public concerns, there has been relatively little research on the embedded learning which is so critical during those transitions. As Teunissen and Westerman (2011) point out, Becker et al (1961) showed a long time ago that the move into the clinical workplace involves a period of learning to manage relationships with clinical supervisors, nurses and others, as well as fulfilling tasks and learning from the process.

To address these transitional issues, the most common solution so far has been to focus on preparedness – that is, medical and clinical educators have expended most energy on research seeking to prepare student doctors as carefully as possible for their new positions (for example Lempp et al, 2005, Illing et al, 2008, Nikendei et al, 2008, Cave et al, 2009). This presupposes that learning and work can be separated, and that the actual sociomaterial conditions of work involve second-order or context/background learning.

However, we believe that theoretical understandings of doctors' learning have to include both material and broader social aspects of clinical work as primary-order learning; the preparedness research is therefore conceptually and practically insufficient and may even contribute to the conditions that increase the risk to patients outlined above. In line with the general theoretical orientation of this book, we seek to interrupt the individualistic and human-centred understandings of responsibility and learning in medical education. Such an account is not only more satisfactory in understanding doctors' learning, but it also helps us rethink pedagogies of responsibility. The chapter will thus briefly explore dominant explanations for doctors learning in transition before coming to actor-network theory (ANT). In order to understand the puzzle we initially described, we consider the assemblages of human and non-human actors which enact junior doctors, and introduce Michel Callon's (1986) analysis. Touching briefly on the research underpinning our approach, we will expand this argument through an example of the enactment of the doctor as someone who comes to be able to take 'life and death' decisions.

Becoming a doctor: accounting for learning

In the UK, where our research is situated, doctors' preliminary medical qualifications are taken in medical school; Once qualified, doctors are provisionally registered with the General Medical Council and enter a compulsory two-year Foundation (F1 and F2) programme designed to provide general clinical experience which includes different specialties; the doctors rotate between different posts. Subsequently, doctors apply for entry to specialist training (ST) and undertake a series of paid posts. Each stage of training has a structured programme with formalized requirements. At foundation level, these include explicit expectations that trainees will have clinical training in a range of practices and procedures and regular, formal educational sessions. Trainees are also required to have a designated educational supervisor, to sign a training/learning agreement at the start of each post and to maintain a logbook and/or a learning portfolio relevant to their current programme, which they discuss with their educational supervisor (or representative).

Acquisitive perspectives

A number of implicit assumptions about learning emerge from this brief outline of the pedagogic support for doctors, and from our discussion earlier about preparedness. First, learning tends to be understood mainly as an individualised, cognitive process (Sfard, 1998, Saljö, 2003; Mason, 2007). Second, context is seen as separate from the learner with the learner enveloped by context (Edwards, 2009). Issues of work organisation, power and wider social and institutional structures are generally excluded from consideration (see for example Unwin et al, 2009). This critique may be taken one step further: because learning is seen as an individualistic, internal and mostly cognitive process, people and artefacts (the sociomaterial world, in other

words) are also separated from the learner and learning/knowledge-making processes (Nespor, 1994; Knorr Cetina, 2001; Fenwick and Edwards, 2010a and b). This not only ignores learning as an embodied process with practical, physical and emotional aspects as well as cognitive ones: as we shall discuss, it also fails to take account of the network or assemblage of actors implicated in learning.

The response to doctors' difficulties with transitions from the field of medical education is almost always to call for more and better 'preparedness' (assumed to be a characteristic of the doctor in question). One reason for the persistence of the concept of preparedness lies in the attribution of difficulties in transition to incomplete learning by doctors. Attributions range from claims concerning deficits in knowledge *about* practice to ones suggesting that the problems lie in learning and knowing *in* practice. The preparedness discussion derives, on the whole, from the former - ie that there is a deficit of knowledge *about* practice.

Even in the case of those seeking to unite learning and practice more closely together through, for example, exercises in reflective practice, it is generally assumed that learning derives from patients and/or knowledge and/or practice. Pedagogical interventions such as simulations and role plays, early clinical experience, peer practice, bedside teaching, collaborative team working and problem-based learning are all channelled through a focus on the patient. All other aspects of the workplace (social and material) fade into the background (context).

Sociocultural perspectives

In contrast, socially derived understandings of learning within the work environment emphasise practice as the basis for learning. Many different versions of these socially derived understandings exist (cf Hager, Lee and Reich, 2012), but within the context of medical education, Lave and Wenger's (1991) work on situated learning is most frequently cited (for example, Bleakley, 2002; Dornan et al, 2005). Learning is viewed as engagement in legitimate peripheral participation under the guidance of experienced practitioners. Learning is thus understood as a form of 'becoming' in which knowledge, values and skills are not separate from practice. However, there are immediate problems in employing these concepts in relation to doctors' transitions and learning.

First, the transition itself is not an apprenticeship; there is frequently a disjunction between one level of responsibility and another. For example, overnight upon qualification, doctors acquire the responsibility to prescribe. Second, responsibility does not necessarily increase progressively through transitions and over time; levels of responsibility may vary between settings and specialities and a trainee may find they have less, rather than more, independence in some settings than others. Third, legitimate responsibility may change significantly depending on other factors such as the time of day (night) and/or who else is present - if there are no experienced practitioners around, trainee doctors have to act as full members, rather than legitimate, peripheral practitioners.

There are other aspects of practice which do not fit Lave and Wenger's characterisation. Clinical teams (to which doctors belong) are not stable communities because the structure of much clinical practice involves shift working and other changing work patterns. The transitional workplace is often populated by intersecting – even competing - communities of professionals

(doctors, nurses, pharmacists, other healthcare workers). There may also be competing values and practices between old-timers and newcomers, as newcomers bring changing practices with them. Finally, practices themselves transform constantly, because of changes in policy and regulation, technological transformation or responses to evidence; the notion therefore of what we mean by an old-timer in relation to these new practices may also be questionable. This critique also has resonance for practice in other professions where service demands of newcomers require high levels of performance and responsibility.

Sociomaterial perspectives

Other theoretical perspectives exist which are concerned with the interplay between the individual and the social world. For example, Hodkinson, Biesta and James' (2008) cultural theory of learning and theory of learning cultures which responds to some of the dualisms (for example, mind/body and individual/social) of learning theories and takes a situated approach in which learning is understood to be practical, embodied and social. However, the human, the social and the cultural are foundational: the non-human, the technical and the material are present but still in the theoretical background, as it were. And yet, in doctors' reports from the field, and the empirical research we have described elsewhere, doctors in transition seem constantly to be battling with a series of trivial but nevertheless highly inconvenient hurdles: passwords, security passes, machines which analyse blood, chest drain kits, patients' notes which seem to travel through wards on journeys of their own.

For this reason, we have drawn on theoretical understandings which resist the separation of the non-human (material and textual) from the human constitution of the workplace. Whilst a range of theoretical possibilities are available, including complexity theory and cultural-historical activity (summarised by Fenwick, 2012), we have approached our research question with what might be called a 'set of sensitivities' (Mol, 2010) in mind: actor-network theory (ANT).

To use such a term is contentious, even for those who have become most associated with it. The oft-repeated quote from Bruno Latour that 'there are four things that do not work with actor-network theory: the word actor, the word network, the word theory and the hyphen! Four nails in the coffin' (Latour 1999, p 15) suggests that he feels it has outstayed its useful life. The publication of Law and Hassard's collected edition, *Actor Network Theory and After*' (1999) also suggests that actor-network theory's time might be up, not least because it is not a theory. Mol (2010) summarises the debate about its theoretical standing neatly: ANT is not a theory because there is no attempt to look for laws of 'nature-culture'; it does not offer causal explanations; it does not suggest a consistent method. However, Mol also proposes that it might be considered a theory if 'a "theory" is something that helps scholars to attune to the world, to see and hear and feel and taste it. Indeed to appreciate it.' (Mol, 2010, p 262). In their overview of the contribution of ANT in education, Fenwick and Edwards (2010a) entitle their first chapter 'A way to intervene, not a theory of what to think' also to indicate that ANT is more akin to a sensibility or, rather, loosely connected sensibilities. By attuning ourselves (Mol, 2010), ANT enables us to 'tell cases, draw contrasts, articulate silent layers, turn questions upside down, focus on the unexpected …' (p 262).

So what might these sensibilities be? For the purposes of this chapter, a good deal will need to be assumed. What is outlined here is only what might be needed to understand the gist or direction of our own interests: others (for example Fenwick, Nerland and Jensen, 2012; Mulcahy, 2012) have written much more extensively about the origins, diverse associations and meanings, or disciplinary work to which actor-network theory and allied ideas have been put in education.

First - we were drawn to an ANT sensibility because of the attention ANT gives to actors – actors (artefacts, people, texts) who do something that makes a difference. But – and this is crucial - ANT is interested in the effects of these actors and their activities – and not in their goals or ends. Take, for example, a new hospital doctor's security pass: such a pass opens doors; it enables those who carry it to move freely between the corridor and the ward without having to ask others (usually via a bell) for admittance; it legitimises pass holders as people who have the right to come and go. And, by reflecting on what happens when new doctors do not have passes or whose passes fail to work (a nearly universal theme in junior doctors' reports of working in UK hospitals), we can see that passes – or more accurately security pads and passes - also contribute to particular kinds of working practices in which the landscape of professional relationships are both sustained and disrupted. It seems that answering the door – both to let others in and/or to establish legitimacy – is the work of nurses on many wards. Whoever answers the door is likely to be in the middle of something else – perhaps attending to a patient, or to paperwork, or preparing something in the sluice room. The admission of another is therefore disruptive of certain kinds of work, and entails an act which is simultaneously gate-keeping (or door-keeping more accurately) and servicing.

In thinking about doctors in transition, passes and keypads as well as nurses are actors – their effect is, in a small way, to legitimate certain people as doctors. Others have noticed such effects in other arenas – for example, Fenwick's (1998) work on teachers' lives also drew attention to the ways in which keys (to classrooms, lockers and so on) did something – they 'exerted important effects on how people felt about their work, themselves and each other.' (Fenwick and Edwards, 2010a, p 7). The effect of not having a pass is that junior doctors do not feel themselves to be legitimate and autonomous.

Second, and as is customary in ANT explanations, we need to attend to what is meant by network. As Mol (2010) points out, following de Saussure, in the same way as words do not point directly to a referent but form part of a network of words (p 257), so too do actors depend on others around them – that is, they are embedded in a network which enacts them. This needs unpacking with an example. Whilst we usually think of doctors as individuals with certain attributes (knowledge, skill, particular attitudes) who are able to move freely amongst patients in their care, 'applying' their knowledge etc, when we look carefully, doctors depend on security passes, passwords, other doctors' notes, medicines, nurses, patients, beds to practise – to doctor. In other words, from an ANT point of view, being a doctor is not a given status conferred by passing one's exams (as so many junior doctors know): the doctor is an effect of a network of immense complexity: patients, passes, notes, nurses, other doctors, instruments, drugs, hospital wards, and much more. The ANT way to speak of this is as an 'assemblage': 'a process of bundling, of assembling … in which the elements put together are not fixed in shape, do not belong to a larger pre-given list but are constructed at least in part as they are entangled together' (Law, 2004, p 42). Thus, passes and nurses in the example above are part of the assemblage of

the doctor in transition; but assemblages or networks – webs of relations – are fluid, ever-changing, inter-dependent and co-existing – with actors (nurses, passes, doctors) associated with many different networks.

Given that we wish to explore the enactment of a doctor which, from this perspective is fluid, unstable, entangled and messy, we have returned to an earlier use of the ANT concept of translation. By translation, ANT theorists mean 'what happens when entities, human and non-human, come together and connect, changing one another to form links' (Fenwick and Edwards, 2010a p 9), thus becoming enrolled as part of the network or assemblage. For us, the concept is helpful because it enables us to trace the formation of linkages with learning as an effect, rather than as an acquisitive or sociocultural process.

Although sometimes criticised for the ways in which others have employed them, Callon's (1986) concepts of 'moments of translation' are particularly helpful in making explicit how some networks become stabilised and powerful across time and space, whilst others fail. These 'moments of translation' are not chronological; nor do they imply a linear, progressive framework, as has sometimes been understood (Fenwick and Edwards, 2010a). In brief, Callon proposed that networks entail *problematisation* in which something attempts to become an 'obligatory passage point' – a framing of problems or ideas and the like. The moment of *interessement* describes how entities are brought to or bring themselves to the network, whilst other entities are excluded. In other words, *interessement* involves strategies to stabilise actors defined through problematisation. Actors are *enrolled* into the network through 'multilateral negotiations, trials of strength and tricks that accompany the interessments and enable them to succeed' (Callon, 1986, p 211). When the actor network stabilises, that is, when actors are transformed into manageable entities that can be transported through space-time, Callon referred to this as *mobilisation*.

We will return to these moments of translation in the enactment of a doctor as someone who as who comes to be able to take 'life and death' decisions when we look closely below at a specific example, taken from our empirical research. But before that, we explain the background to our study.

Researching doctors learning responsibility

Fuller accounts of the methodology, ethical procedures, method, participants and analysis of the study informing this chapter are given elsewhere (Kilminster et al, 2010, 2011)[ii], together with the broad findings. In short, in our original study, *Learning responsibility? Exploring doctors' transitions to new levels of medical performance*, we sought to understand better from a learning perspective the transitions which are such a major feature of doctors' careers: ward to ward, specialty to specialty, level to level. We concentrated on doctors working in elderly medicine because this specialty involves complex patient care pathways and decision making. In order to investigate learning in transition, we focused on two main points of transition: from medical student to foundation training (F1); and from foundation training or generalist training to specialist clinical practice/specialist training (ST). We investigated aspects of transition at four regulatory levels - the individual, their clinical team (and the site in which they were located), their employer and the regulatory and policy context. We drew on documentary evidence and interviews with a

range of clinical team members (consultants, pharmacists, senior nurses, physiotherapists and son on). But our key participants were F1 and ST doctors who we interviewed twice – once at the point of transition and once more, two to three months later. We asked participants if we could observe them at work on the ward, near the beginning of the transition we were investigating, and following the first interview. The case below is taken from an observation of an F1, undertaken by the first author of this chapter.

The blue form: enacting doctors who care for the dying

> 'When I come on the ward, the consultant is behind the desk with the matron and the specialist trainee. The consultant discusses the treatment of a dying patient and gives F13 an instruction to stop treatment – F13 asks if she should fill in the 'blue form' and the consultant goes through the form, showing which sections she needs to fill in. She asks again about stopping all treatment and the consultant says yes, so she goes to find the patient's file, tells the nurse that they are stopping everything and brings them back to the desk. She returns to the 'blue form' throughout the evening, switching backwards and forwards between the patient's thick file and the 'blue form', sometimes reading and sometimes writing.' (Observation notes.)

The 'blue form' refers here to a specific protocol in the UK entitled the 'Liverpool Care Pathway (LCP) for the Dying Patient' which is intended to 'improve the care of the dying in the last hours/days of life'. Once it is agreed that a patient is on the LCP and therefore that they are being cared for as someone who is dying, a form is completed to this effect. But, rather than understanding this as a bureaucratic process, in which humans are privileged and complete forms, we have considered this from the vantage point that things (bodies, texts, passes) are all assumed to be capable of exerting force and joining together to form networks across time and space. A point to repeat from above, therefore: a junior doctor (this junior doctor) does not pre-exist when he or she passes their exams. Instead, she is an effect of blue forms, dying patients, consultants - these entities connect with another and with other actors as an assemblage network that enacts a doctor.

The LCP and the blue forms are also enactments of knowledge that came into being through networks at a distance both temporally and spatially (*Liverpool* refers here to a place as well as an approach). They could be regarded as delegates of other networks (Fenwick and Edwards. 2010b) or 'immutable mobiles' (Latour, 1987), moving into new spaces (wards, other clinical settings in this case) to draw together the network. This 'network of knowledge' (Fenwick and Edwards, 2010a, p 17) of the blue form acts in a number of ways: bureaucratically in the requirement that actions be recorded; pedagogically in the ordering and framing of the treatment of a dying person for a new doctor; epistemologically in the gathering together of 'best practice' in the care of the dying; and clinically in the actions brought about such as the withdrawal of treatment.

To return to Callon's (1986) 'moments of translation' as outlined above. Decisions on how best to treat dying patients within a variety of care settings (eg hospitals) are framed as a process in which excellent care can be transferred from site to site:

'The LCP affirms the vision of transferring the model of excellence for care of the dying from hospice care into other healthcare settings We have demonstrated a process that inspires, motivates and truly empowers the generic workforce in caring for the patient and their family in the last hours or days of life.' (LCP, 2010).

Thus the LCP/blue form frames the problem (the *obligatory passage point*) as how to acknowledge and care for someone who is dying using 'the model of excellence' generated in places which are not hospitals (*problematisation*).

The moment of *interessement* involves strategies to stabilise actors defined through problematisation. Actors are invited into this framing – not only hospice workers but doctors, nurses, the multi-disciplinary team (MDT), patients' families, patients, drugs, other treatments, organisations, and so on, to become *enrolled* as caring for the dying. Some entities are excluded in this process – presumably curative treatments amongst them. The network relations of the LCP are *mobilised* when care of the dying is transformed into a manageable entity that can be transported through space-time. Thus, in this analysis, the form is an actor with the effect of enacting a doctor who cares for dying as well as sick patients.

I asked F13 about filling in the 'blue form' in the follow-up interview three months later. In response, F13 said:

'I've got better at recognising patients who are dying and maybe just benefit from palliative care and then just deciding when it might be appropriate to start that and then discussing that with a senior.'

The blue form is therefore part of an assemblage which has 'done' several things: it has assisted F13 in 'recognising patients who are dying'; it has enrolled F13 as someone who is able – in theory at least - to practise palliative as well as therapeutic care; and it has enacted F13 as a responsible junior doctor who is able to decide (albeit in consultation with a senior) on matters – literally – of life and death.

This is, but one example: many others have had the insight that texts are actors. Specifically in relation to clinical practice, Berg (1996), for example, analyses the ways in which medical records figure as 'a fundamental, constitutive element of medical practice' (p 499). He argues that medical records enter 'into the 'thinking' processes of medical personnel and into their relations with patients and with each other'. They 'help to shape the form the patient's trajectory takes' and also transform the body into 'an extension of the hospital's routines' (p 520) whilst they are continually altered and worked on by the very individuals whose work practices they transform. The additional insight we offer is that texts and other material enactments are fundamental in understanding learning as well as practice.

In presenting this example and other empirically-derived sociomaterial analyses to colleagues, we have been asked – why focus on the blue form when it is the medium of transmission of cultural practices, rather than an 'agent' in itself? Critics have argued that the form does not do anything by itself, and to suggest that it does is to project human capacities on to a text (or object, or other inanimate objects). The response to this long-standing criticism of ANT is summarised crisply by Fenwick (2012) in terms we discussed above:

> '…the concept of agency has traditionally been limited by its human-centric definitions associated with intention, initiative and exercises of power… Agency [in ANT] is understood as a distributed *effect* produced in material webs of human and non-human assemblages.' (p. 71) (italics in the original; content in brackets added)

But such assemblages are not random and are not sustained without 'interest' – defined by Mol (2010) as a verb (that is, to interest). Assemblages are, as she says, 'hard work' (p 259), if they are to succeed. In thinking of how to speak about what sustains a network, one of her suggestions is to talk of 'logics' since this 'stresses that what makes up a distinct network/logic and what belongs to another, partly depends on what makes sense in the terms of the network/logic at hand' (p 259). In her work on professionalism, she contrasts the logics of choice and care which she sees operating in clinical practice (Mol, 2008). A logic of choice presupposes that care practices are linear – measures are taken, instruments are used, facts are presented, patients are given information after which they are able to evaluate their choices and come to a decision. However, care practices are not linear:

> 'Facts do not precede decisions and activities, but depend on what is hoped for and on what can be done. Deciding to do something is rarely enough to actually achieve it. … Caring is a question of 'doctoring': of tinkering with bodies, technologies and knowledge – and with people too.'(p 12)

We have worked through instances of doctors' workarounds or tinkering (Zukas and Kilminster, 2012b) and argued that doctors are educated within a logic of choice (for example, seeking consent for medical intervention so that a patient knows what their 'choice' might be), but come to learn to work within a logic of care based on 'what can be done'. Nevertheless, the logic of 'choice' prefigures educational and public discourse, and some of the changing conditions for professional practice (for example as outlined by Fenwick, Nerland and Jensen, 2012).

Conclusions

The analysis here has focused on the translation involved in enacting a responsible junior doctor who is able to decide (albeit in consultation with a senior) on matters of life and death. Since the fieldwork reported here was completed and an earlier version of the paper was presented at a conference in 2011, substantial controversy has erupted in the UK about the ways in which decisions are taken to put patients on the LCP. A variety of claims have been made including that: patients' relatives were not informed or consulted; decisions were taken inappropriately; and in a few instances, care was cruel because patients were deprived of pain relief and water (this is not advised in the LCP). As we write, each day brings fresh debate in the newspapers and on websites as to what should be done. A change to the National Health Service (NHS) constitution has been proposed by the current Government in which patients and their families would be given a legal right to be consulted on all decisions about end-of-life care. The rights would mean that patients and relatives could sue the NHS if the requirements are not met, and doctors could be struck off the register if they fail to consult properly. New networks are forming - at the top of the list of a web-based search on the LCP is a paid advertisement from a legal firm claiming to specialize in cases involving the LCP, particularly where relatives were not consulted, and seeking

to collect enough evidence to bring forward a collective case for compensation. Put differently, whilst 'best practice' in the care of dying patients is still framed through the LCP in the current debate, the actors invited into this framing (*interessement*) are expanding. This is a stark reminder, if one were needed, that actor-networks are unstable, complex and dynamic as well as fixed and durable, coming into being through interest and 'hard work'. It is clear too which logic is legitimized in this discussion.

Having made the case that the theoretical resources for understanding doctors' learning in transition need to be expanded if doctors are to be enabled to make smoother transitions (and patients are to benefit), we have argued through a single example for a sociomaterial approach. Following in the tradition of Callon's early work, we have analysed the translation of the LCP (the blue form) network which enacts doctors who care for the dying. Such an approach turns on its head the 'preparedness' research, cited at the start of this paper.

Our struggle to understand doctors' learning (in transition or otherwise) through an ANT sensibility is, as Mulcahy (2011) puts it so acutely, an attempt to conceive of learning as 'a matter of seeing double': 'In a socio-material account of learning, we are impelled to give attention, at one and the same time, to its *socialities* and *materialities*…Seeing double is a matter of taking associations or connections or relations into account.' (p 125; italics in the original). Pedagogies of responsibility generally, and doctors' learning in transition specifically, require us to re-view those transitions, to trace the assemblages which enact junior doctors, to describe more precisely the significance of seemingly trivial impediments to doctors working (passwords, passes, machines, record-keeping and form-filling). Most importantly, we need to understand better the relations or connections with patients, disease, other professionals involved in patient care, protocols, employers, legislation – the list could go on. We believe that an ANT sensibility offers one way forward.

---

[i] An earlier version of this paper was given at the 7th International Conference on Researching Work and Learning. East China Normal University, Shanghai 2011.

References

Becker, H.S., Blanche, G., Hughes, E.C., and Strauss, A.L. (1961) *Boys in White: Student Culture in Medical School.* Chicago: University of Chicago Press.

Berg, M. (1996) 'Practices of reading and writing: the constitutive role of the patient record in medical work', *Sociology of Health and Illness*, 18 (4), 499-524.

Bleakley, A. (2005) 'Stories as data, data as stories: making sense of narrative inquiry in clinical education', *Medical Education*, 39 (5), 534-40.

Callon, M. (1986) 'Some elements of a sociology of translation: domestication of the scallops and the fishermen of Saint Brieuc Bay', in J. Law (ed) *Power, Action and Belief: A New Sociology of Knowledge?,* London: Routledge and Kegan Paul.

Cave, J., Woolf, K., Jones, A. and Dacre, J. (2009) 'Easing the transition from student to doctor: How can medical schools prepare their graduates for starting work?', *Medical Teacher*, 31 (5), 403-8.

Dornan, T., Scherpbier, A., King, N. and Boshuizen, H. (2005), 'Clinical teachers and problem-based learning: a phenomenological study', *Medical Education*, 39 (2), 163-70.

Edwards, R. (2009) 'Life as a learning context?', in R. Edwards, G. Biesta and M. Thorpe (eds) *Rethinking contexts for learning and teaching: communities, activities and networks*. Abingdon: Routledge.

Fenwick, T. (1998) 'Managing space, energy and self: beyond classroom management with junior high school teachers', *Teachers and Teacher Education,* 14 (6), 619-631.

Fenwick, T. (2012) 'Matters of knowing and doing: sociomaterial approaches to understanding practice', in P. Hager, A. Lee and A. Reich (eds) *Practice, Learning and Change: practice-theory perspectives in professional learning*. Dordrecht: Springer.

Fenwick, T. and Edwards, R. (2010a) *Actor-network theory in education*. Abingdon: Routledge.

Fenwick, T. and Edwards, R. (2010b) 'Reading educational reform with actor network theory: Fluid spaces, otherings, and ambivalences', *Educational Philosophy and Theory*, online first, DOI: 10.1111/j.1469-5812.2009.00609.x

Fenwick, T., Nerland, M. and Jensen K. (2012) 'Sociomaterial approaches to conceptualising professional learning and practice', *Journal of Education and Work*, 25 (1), 1-13.

Hager, P., Lee, A. and Reich A. (eds) (2012) *Practice, Learning and Change: practice-theory perspectives in professional learning*. Dordrecht: Springer.

Haller, G., Myles, P.S., Taffe, P., Perneger, T.V. and Wu, C.L. (2009) 'Rate of undesirable events at beginning of academic year: retrospective cohort study', *British Medical Journal,* 339: b3974.

Hodkinson, P., Biesta, G. and James, D. (2008) 'Understanding learning culturally: overcoming the dualism between social and individual views of learning', *Vocations and Learning*, 1, 27-47.

Illing, J., Morrow, G., Kergon, C., Burford B., Spencer J., Peile E., Davies C., Baldauf B., Allen M., Johnson N., Morrison J., Donaldson M., Whitelaw M and Field M. (2008) *How prepared are medical graduates to begin practice? A comparison of three diverse UK medical schools: Final summary and conclusions for the GMC Education Committee*. London: General Medical Council.

Jen, M.H., Bottle, A., Majeed, A., Bell, D. and Aylin, P. (2009) 'Early in-hospital mortality following trainee doctors' first day at work', *PLoS ONE*: 4 (9), e7103.

Kilminster, S., Zukas, M., Quinton, N. and Roberts, T. (2010) 'Learning practice? Exploring the links between transitions and medical performance', *Journal of Health Organization and Management*, 24 (6), 556-570.

Kilminster, S., Zukas, M., Quinton, N. and Roberts, T. (2011) 'Preparedness is not enough: understanding transitions as critically intensive learning periods', *Medical Education*, 45, 1006-1015.

Knorr Cetina, K. (2001) 'Objectual practice', in T.R. Schatzki, K. Knorr Cetina and E. Von Savigny (eds) *The practice turn in contemporary theory*. Abingdon: Routledge.

Latour, B. (1987) *Science in Action*. Cambridge, MA: Harvard University Press

Latour, B. (1999) 'On recalling ANT' in J. Law and J. Hassard (eds) *Actor Network Theory and After*. Oxford: Blackwell Publishers.

Lave, J. and Wenger, E. (1991) *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

Law, J. (2004) *After Method: Mess in Social Science Research*. Abingdon: Routledge.

Law, J. and Hassard, J. (eds) (1999) *Actor Network Theory and After*. Oxford: Blackwell Publishers.

LCP (2010) *What is the LCP? (Healthcare professionals)*. Liverpool: Marie Curie Palliative Care Institute.

Lempp, H., Seabrook, M., Cochrane M. and Rees J. (2005) 'The transition from medical student to doctor: perceptions of final year students and preregistration house officers related to expected learning outcomes', *International Journal of Clinical Practice*, 59 (3) 324-9.

Mason, L. (2007) 'Introduction: Bridging the cognitive and sociocultural approaches in research on conceptual change. Is it feasible?', *Educational Psychologist*, 42 (1), 1-7.

Mol, A. (2008) The logic of care: health and the problem of patient choice. Abingdon: Routledge.

Mol, A. (2010) 'Actor-network theory: sensitive terms and enduring tensions', *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 50 (1), 253-269.

Mulcahy, D. (2012) 'Thinking teacher professional learning performatively: a socio-material account', *Journal of Education and Work*, 25 (1), 121-139.

Nespor, J. (1994) *Knowledge in motion: space, time and curriculum in undergraduate physics and management*. Philadelphia: Falmer Press.

Nikendei, C.B., Kraus, B., Schrauth, M., Briem, S. and Junger, J. (2008) 'Ward rounds: how prepared are future doctors?', *Medical Teacher*, 30 (1), 88–91.

Saljö, R. (2003) 'From transfer to boundary-crossing', in T. Tuomi-Gröhn and Y. Engeström (eds) *Between school and work: new perspectives on transfer and boundary-crossing*. Amsterdam: Elsevier.

Sfard, A. (1998) 'On two metaphors for learning and the dangers of choosing just one', *Educational Researcher*, 27 (2), 4-13.

Teunissen, P.W. and Westerman, M. (2011) 'Junior doctors caught in the clash: the transition from working to learning explored', *Medical Education*, 45, pp 968-970.

Unwin, L., Fuller, A., Felstead, A. and Jewson, N. (2009) 'Worlds within worlds: the relational dance between context and learning in the workplace' in R. Edwards, G. Biesta and M. Thorpe

(eds) *Rethinking contexts for learning and teaching: communities, activities and networks*. London: Routledge.

Zukas, M. and Kilminster, S. (2012) 'Learning to practise, practising to learn: doctors' transitions to new levels of responsibility' in P. Hager, A. Lee and A. Reich (eds) *Practice, Learning and Change: practice-theory perspectives in professional learning*. Dordrecht: Springer.

Zukas, M. and Kilminster, S. (2012) 'Doctors in transition: conflicting responsibilities in practice', contribution to symposium on *Practices that 'matter': Material enactments of professionals' conflicting responsibilities*, given at the Propel (Professional Practice, Education and Learning) International Conference, Stirling, Scotland.