

'THRESHOLD GUARDIANS': THRESHOLD CONCEPTS AS GUARDIANS OF THE DISCIPLINE

SETTING THE INTERDISCIPLINARY SCENE

Writing about co-operation and solidarity means writing at the same time about rejection and mistrust. (Douglas, 1986, p. 1)

Interdisciplinarity

Interdisciplinarity has undoubtedly changed the landscape of academic work in recent years and, increasingly, students are also 'living the dream'; but it can be a dream of interdisciplinary possibilities that do not always come good, and have sometimes 'succeeded' only when we offset a great deal of time and effort that went on in the background. It is the implications of some of those difficulties that will be explored here: there are often 'basic' organisational difficulties but there are also profound difficulties for students facing conflicting epistemological claims and/or threshold concepts. What do you do when your tutors or supervisors are *literally* arguing from different premises, with the implication that meaning-construction and intellectual reference points are as different as the physical buildings?

Threshold concepts are very much the children of an interdisciplinary age: the idea arose (Meyer & Land, 2003) from interdisciplinary collaboration but also gained traction partly because it is a boon to thinking about learning across disciplinary fields. It offers a way to begin the task of understanding why disciplinary differences can run so deep, something which was simply not of interest in a world where academics rarely stepped outside their disciplinary knowledge for long (and, when they did, on their own terms). Considering incommensurability in interdisciplinary work through the lens of threshold concepts ought to enrich both discourses: as Carmichael (2010, p. 60)'s subject 'D' put it '[threshold concepts] help *define the discipline*'.

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Interdisciplinarity and Us

Too many claims have been made for interdisciplinary work to rehearse here (eg Klein's foundations for the field in Klein 1990, 1996, 2001, 2004, 2005; Lattuca 2001; Nowotny, Scott, & Gibbons 2003). Calls to 'knock down walls' and 'liberate knowledge' from the 'restrictions' of (mono)disciplines have become less strident with the widespread adoption of interdisciplinarity as institutional policy (eg Castronovo, 2000, pp. 781–90; Klein 1996, p. 224). Notable moments in its rise are Roy (1979, p. 165)'s much-quoted line that 'the real problems of society do not come in discipline-shaped blocks' and the corollary that universities must move beyond the disciplines to formulate 'real' solutions to 'real' problems: a similar and influential thesis is that of 'Mode 2' knowledge put forward originally by Gibbons, Limoges, & Nowotny (1994) and reformulated in Nowotny, Scott & Gibbons (2003). Similarly ambitious (but also similarly vague) claims were put forward for 'superconcepts' by Wilson (2010).

Publicly there is now little doubt expressed that interdisciplinary work will 'change the world' both within and also beyond the academy, though locally the experience is sometimes more fractured (Townsend, Pisapia & Razzak, 2013). There is a sense (or a claim) that tangible and meaningful effects on 'real life', previously inaccessible to introspective monodisciplinary approaches and interests, can be reached successfully by interdisciplinary collaboration.

Interdisciplinary Ravines

There are difficulties with some of the more ambitious formulations which cannot be addressed fully here for reasons of space: put in brutally simple terms, it may be that even 'real life' does not come in 'real-life shaped chunks', because it is different materials, and the formulation of distinct questions and answers, that tends to give rise to disciplinary expertise in the first place (see, for instance and across different fields, Concerns, 2001; Ziman, 2003; Rowland, 2006; Hunt, 1994; Fish, 1994 & 1995 and Davies, 2011). Furthermore, new (inter)disciplines must create their own meanings, and will begin to look suspiciously comparable to 'traditional' disciplines if they are to generate a disciplinary community.

Translated into the discourse of threshold concepts, we are dealing with a claim that reducing concepts' particularity (eg making them 'less difficult to understand' or 'reducing their specialism' by 'knocking down walls') makes them somehow easier to combine, and 'better', once combined. This seems less convincing in translation than it did in the original. That is not to say that the effort to combine them and do interdisciplinary work is not worthwhile or productive: but it

underlines that all too often, ‘thinking outside the box’ requires the immediate construction of a new box with a different design and a different set of understandings for what constitutes ‘success’.

THRESHOLD CONCEPTS AND INTERDISCIPLINARITY

To put it another way, incommensurability – the supposed bane of interdisciplinary work – is emphatically predicted by threshold concepts: they are ‘transformative’, ‘irreversible’, ‘integrative’, ‘bounded’, and ‘troublesome’. Most of these terms prescribe difference from common or inexperienced understanding: an irreversible, learned transformation in perspective can only be part of a shared understanding in a strictly defined context – a ‘disciplined’ space (in both senses). A group who have distinctive, overlapping and potentially competing threshold concepts will approach the same task and materials very differently. Neither they nor disciplinary methods and values can simply be added to or multiplied by one another.

Threshold concepts have, of course, been invoked to explore (inter)disciplinarity (Trowler, Saunders & Bamber, 2012, p. 24; Irvine & Carmichael, 2009, Carmichael, 2010) and could be used further in this regard, since they bring a sense of texture to the incommensurability that is so embedded in interdisciplinarity (Rowland, 2006, p. 87–103; Davies, 2011). Dexterity in interdisciplinarity is (*learned*: Land (2012), touching on many issues developed in here, argues that it is itself a threshold concept. Considering incommensurability in interdisciplinary work through the lens of threshold concepts ought to enrich both discourses. This study, in the spirit of the opening quote by the anthropologist Mary Douglas, intends to explore that possibility by focussing on breakdowns, evasions and other opportunistic ‘tactics’ (de Certeau, 1984, p. 84).

TROUBLE IN PARADISE

In a monodisciplinary research environment, there is shared understanding (describable as ‘shared threshold concepts’) – enough for people to know how to disagree, for instance. In a teaching environment, the teacher’s authority will normally be a proxy for this common ground, with the implied assurance that s/he will decide what is relevant. Thus, when awkward, interesting but tangential questions are asked, they are usually (and legitimately) evaded on the grounds there is a point ‘which we need to stick to’. This commonality is so deep that should an eminent researcher ask ‘what is the point of our subject?’, the audience will generally expect that the questioner can offer some kind of coherent answer rather than treat it as an invitation to throw in the towel altogether.

Interdisciplinary work brings its own particular frictions: one can more easily find oneself staring into the abyss of what authenticates and characterises the discipline(s) in question, and therefore ‘the point we must stick to’ is an unknown.

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More importantly, it is likely to evade any attempts to fix it: what can be drawn on to make judgements is itself subject to contestation. Will the group want a consensus about what is sought or tolerate huge ambiguity and polyvalence? How would a group decide whether it needed a consensus? By consensus?

This kind of scenario is implicitly acknowledged in discussions about interdisciplinary research — ‘stay clear on focus, extend the benefits of serendipity to more people, and remember that one size does not fit all’, recommend Townsend et al (2013), after noting the calls for ‘headspace’ by academics attempting to do meaningful interdisciplinary work. In practice this often means respecting each others’ expertise while patiently seeking ways to find the new mutual understandings that characterise successful interdisciplinary work. Much time can pass with a truce rather than genuine integration. This kind of situation is, of course, something that can, like anything else, be scrutinised by academic analysis or enquiry. The question is: by which methods?

Disciplines as tribes

Becher & Trowler (2001) famously dubbed disciplinary communities ‘tribes’. Notwithstanding recent reformulations (especially Manathunga, Brew & Bamber, 2012), ‘tribes’ has advantages as a metaphor for disciplinary communities.

‘Tribes’ encountering others must form *some* kind of relationship (usually with the assumption, well-known to anthropologists, that ‘we’, unlike ‘them’, do things ‘properly’); there may be trading, exclusion, assimilation, defence manoeuvres (such as retreat or fence-building) or outright aggression (colonisation, deprecation, disciplinary imperialism). In such encounters there will be a range of different artefacts and objects put to use, and/or shared ‘zones’ established, sometimes deliberately, sometimes reluctantly. Notions such as Star & Griesemer (1989)’s ‘boundary objects’ and Collins, Evans & Gorman (2007)’s ‘trading zones’ are established motifs in the history of science where distinct groups with different interests must co-operate. Objects may have multiple meanings for different groups and where this polyvalency is permitted and understood, trade and communication is thereby facilitated. Should a particular group attempt to establish a monopoly on an object’s meaning, however, then co-operation ceases and conflicts arise. Notwithstanding the frustration, these are interesting opportunities to discover more about the protagonists as they (re-)articulate their values in an attempt to establish that elusive hegemony (Rowland, 2006, pp. 87-103). The logical inference is that if threshold concepts can be ‘enabling’, they might also be implicated in disciplinary self-defence.

In my experience of interdisciplinary research and teaching, threshold concepts have also been crucial ‘objects’, but enquiry into, and articulation of, their role has

tended to be implicit and inchoate. Through three metaphors, I wish to explore here the deployment of threshold concepts not as enabling ‘doorways’ but rather as locked doors or ‘threshold guardians’.

Methodology and fieldnotes

The material discussed below generally only appears during free-ranging reflective discussion; it touches on issues that are rarely discussed explicitly, generally to the extent that they are intractable: they are not likely to appear in questionnaires. The following fieldnotes came to light in varied contexts; some during formal study in academic development work as part of teaching on an MA at UCL, and others within an interdisciplinary programme on *Evidence* that ran at UCL from 2003, culminating in conferences during 2008 and a collected volume (Twining, Dawid & Vasilaki, 2011). As described in greater detail in Davies (2011, pp. 49-52), we (Stephen Rowland and myself) developed an approach that sought to privilege enquiry over conclusions and evaded the use of particular disciplinary methods that might exclude interesting but exotic pieces of information. We were working ethnographically with partial glimpses of life within disciplines, in situations where tacit knowledge was emphatically *not* common knowledge.

To give an evocative example, we spent several hours discussing the relative status of ‘off-hand comments in the corridor’ and ‘official’ communications in wondering what the programme ‘actually was’ before deciding, essentially, to include anything that either of us thought was interesting or difficult as a starting point for sustained enquiry. Violations of expectations and a sense of being wrongfooted (whether in us or our colleagues), which were often initially attributed by many to ‘personal differences’ or ‘(lack of) manners’, increasingly looked less like ‘personal’ quirks or approaches as we explored them: they usually began to resemble the tips of disciplinary knowledge-and-praxis icebergs. Because these responses were so context-sensitive and unpredictable, each encounter was unique (unless it seemed to fall into a pattern). As I extended the habit of compiling such fieldnotes outside the *Evidence* project, certain broad types of interdisciplinary engagements and scenarios seemed to emerge in other contexts.

Needless to say, this is not a quantitative study. It is at the more elusive end of the ethnographic scale and evokes the tradition of anthropological fieldwork rather than large scale social science questionnaires.

This does not mean that my examples are trivial: what they share is that they did so at moments where the operation of the discipline (and good candidates for threshold concepts) were implicitly challenged. In each case, the disciplinary construct was protected from the implicit challenge, and threshold concepts became ‘threshold guardians’. They are enactments of an ‘expert pragmatism’ that acknowledged and responded to the unexpected emergence of incommensurability.

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Limitations of This Enquiry

If we had a table of canonical threshold concepts against which to map these moments of incommensurability, this would be less of an enquiry: it would be possible to indicate which universally-accepted threshold concepts were being violated and move on to building a solid and canonical taxonomy for classifying ‘threshold guardian’ moments. Fortunately, such instrumentalism has generally been eschewed in the discourse of threshold concepts.

My suggested framework is therefore no more than possible starting points and is deliberately restricted to being evocative metaphors that highlight the distinctiveness of these encounters. Just as the ethnographer is interested in the social *use* of cognitive objects as much as their content, so too we can begin an enquiry into the swampy areas of how a discipline's threshold concepts (or plausible candidates for the title) feature in the building and maintenance of disciplinary integrity by ‘tribes’ in academia.

THRESHOLD GUARDIANS

Scenario 1. ‘Surrender your passport’

Students moving from one discipline to another, typically in the transition from undergraduate to postgraduate, may find they cannot take their most cherished threshold concepts with them. A Chemical Engineer told me of the difficulty she has ‘persuading’ (perhaps rather than ‘teaching’) Chemistry graduates entering her field precisely what ‘balancing an equation’ means in applied Chemical Engineering (industrial plants-based) rather than in pure Chemistry (labs). Different margins of error are permitted in the respective disciplines because of their criteria of what is sufficient for explanation and application. Chemical Engineers have their eye on such factors as cost and ‘acceptable (material and financial) losses’, and therefore cannot disregard minor fluctuations that barely qualify as curiosities in a lab. The loss of a single gram in an experiment involving test-tubes — perhaps attributable to a barely-detectable spillage during the mixing — could translate into thousands of tons on the scale that chemical engineers work at. On the other hand, chemical engineers must allow for *larger* margins of error simply because of the scale of their operations. What is at stake in chemical equations will subtly but profoundly alter as someone moves from one field to the other, even if this seems a good candidate for being a threshold ‘skill’ (Sanders et al, 2012) rather than a threshold ‘concept’.

This disciplinary difference is not initially epistemological (physical chemistry has not changed) but becomes so when we consider ‘balancing an equation’ as a

threshold concept. Considerations arising in the application of ‘pure’ theory are what make the disciplines distinctive: what is critical is that there are very different consequences when *mistakes* are made and only then do different aspects of ‘balancing an equation’ become more or less interesting. My fieldnote notes her (the aforementioned Chemical Engineer) wry comment highlighting one other aspect that would be less inconvenient on a small-scale and in a laboratory: ‘I just don’t want them to blow up the plant: it’s messier than blowing up a lab.’

This kind of difference can be counter-intuitive: there is a tendency for complete outsiders to assume that neighbouring disciplines will have *common* understandings but it is often precisely in those apparent overlaps where threshold concepts are most energetically applied, precisely to make disciplinary work distinctive. In other words, ‘what counts as balancing an equation’, far from constituting some ‘pan-Chemical’ understanding, might be *the* difference between a chemist and a chemical engineer (being neither, I am wary of assuming I can elaborate further on this topic).

These kinds of differences can of course be widely acknowledged and publicly (ie within the field) debated: to move to a completely different intellectual corner, historians of religion and anthropologists have grappled for many years with the need to displace and then re-place conceptions of religion (or programmatically dispense with it altogether), precisely because modern assumptions will almost certainly mislead students. Rüpke (2007) spends his first chapter (38 pages) tackling every ancient religionist’s lot — the so-called ‘negative canon’ of what religion was *not* in the Roman world. In anthropology, Saler (1993) is a useful overview of (and pragmatic response to) the same kinds of issues: western conceptions should, for him, be subjected to the same contextualisation as non-western ones, becoming objects of study rather than unproblematised methods. Non-western ideas should similarly be used alongside them as heuristics for comparative purposes. ‘Religion’ cannot persist in anything remotely like its familiar westernised form.

Boundary crossing is not out of the question in these kinds of situations, but there is no room for compromise: one must ‘go native’ in the new field by surrendering the irreversible change of perspective that had previously been obtained, and taking on the local threshold concepts on their own terms. If the change in perspective really is irreversible (and I suspect it is), it must be effortfully set aside cognitively in the new context, and existing disciplinary identity ‘loosened’, as Land (2012, p. 182) puts it. This implies a post-disciplinary stage of academic practice, where one must learn to *evade* the hard-won understanding enshrined in threshold concepts in order to do interdisciplinary work.

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2. 'Here be Dragons'

My second scenario is of experts 'locking the doors' to keep the disciplined *in* (or perhaps 'safe') and draws on an example from an interdisciplinary email thread that I have discussed elsewhere (Davies, 2010). Under discussion was the 'Chinese Room' thought experiment, which explores differences (if any) of the intelligence of a 'comprehending being' from a computer programme (or other 'uncomprehending being').

A physiologist wrote:

I don't have patience for arguments from the Chinese Room experiment, because as a physiologist I consider the human brain to be a machine.

A historian responded:

Who makes that judgement ... The brain? How does the brain do so? Automatically, presumably, if we keep to the logic of your position? ... Or are you implicitly distinguishing 'brain' from 'self'?

And a pharmacologist responded privately to that historian:

If the brain is not a machine, then what is it? The only other possibility seems to be start talking about souls or some other form of mysticism. I'd prefer not to do that myself.

This is a rich exchange and I must, for reasons of space, limit my observations. Each practitioner has reached the limits of where their fundamental concepts obtain and will go no further: for the physiologist, this is 'organism as machine'; the historian seeks to preserve the historiographically necessary category of non-mechanical 'human agents'; and for the pharmacologist, we have 'organism as machine' but more explicitly non-deistically.

The final, private, comment makes explicit something that the first, more public, email only implies: an awareness that outside normal disciplinary frameworks, not only do habitual explanatory structures fail to provide useful insight, those concepts might fail to find *any* purchase. Each beats a tactical retreat from the engagement rather than expose their essential concepts to such danger. The historian, on the other hand, cannot produce a meaningful historical account if humanity's actions derive from machine behaviour and must therefore seek *something* with conscious and deliberate agency, though he is nervous of where he is forced to go (and in fact the exchange ended there).

Another example was relayed to me personally, where a professor of History was despairing of Derridean deconstructionism. His (not incorrect) reading was that adopting such an approach meant that 'one can *never* escape from a text'. Given historians' heavy reliance on texts and particularly their need to 'take ideas *out* of

the text' with the assumption that they have a reasonable chance of conveying 'factual information', his response was simple: he ignored Derrida, though not without some genuine and persistent misgivings that he was neglecting something potentially important.

Scenario 3. 'Cattle-raiding'

On the same theme, another historian put things differently: my note of his response paraphrases a more assertive stance:

The interesting question is not whether Derrida and his peers were correct but why they backed themselves into a corner where it was almost impossible to say anything about the world.

The best form of defence is attack; by *historicising* Derrida, he neutralised the threat of the infinite, imagined and imagining textual world with an entrance but no exit: no longer is there a text into which one steps, never to return, but rather a historically real man creating a historically real text. One threshold concept, (the wor(l)d of the text) has lost out to others (chronological and spatial locatedness); and the hegemony of historical knowledge re-established by the sheer act of knowledge-construction.

Deconstructionism can now be referred to without any threat of contagion because all meaning has been assimilated to a historicising discourse: the infinite text-world now stems from a particular agent, the construction of a particular culture, time and location. But then, of course, a textual critic might flip it back by saying 'the author' has now been inscribed as a historical text: the academic game continues. And this is not to say that postmodern textuality is ignored or utterly denatured in history, far from it: Derridean methods are certainly heeded but principally used to sharpen history's sword, as it were (as occurs, for instance, in Jenkins, 1995).

Why 'cattle-raiding' as a metaphor? Indo-European myths of cattle asserted that not only was the tribe granted their cattle at the beginning of time by the deity, they were granted *all* cattle: any found in the possession of neighbouring tribes had therefore been stolen at some point and one was therefore perfectly entitled to go and get them 'back' from the other, alien, tribe (Walcot, 1979). That this game is rigged from the start to justify *any* appropriation is obvious to us in this example, but less obvious is the similarity of the expectation in academia that almost any field of activity or knowledge can legitimately be appropriated into disciplinary discourse. That process often comes about by asserting an account that brings threshold concepts into play. Once seen through a disciplinary gaze, the material has been claimed.

This is perhaps more aggressive as a metaphor than my example invites, but I have known more energetic sallies than these examples to 'assimilate' other disciplines' 'property'. Conversely, there are areas where disciplines politely decline to go: anthropologists, for instance, nowadays virtually never mount raids or even send

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scouts to classical antiquity, even though the two had strong links in the early 20th century. This is also despite the fact that as the discipline builds up a past for itself, it is increasingly dealing with historical rather than contemporary material. In contrast, the new interdiscipline of cognitive science of religion, has no such qualms and is cheerfully sending out would-be colonists to relevant fields (eg Martin & Sørensen, 2011).

COMING CLEAN FOR THE SAKE OF THE STUDENTS

In this initial exploration of these difficulties, I risk going against two grains: both interdisciplinarity and threshold concepts are generally deployed as ‘enabling’ (see eg Cousin, 2010; Kinchin 2010; Irvine & Carmichael 2009, esp. 116–117) and to point at ‘disabling’ practices might easily be understood to be identifying ‘areas for improvement’ and ‘practices that should be deprecated’. That is far from my intention: attempts to ‘solve’ these issues would lead to an infinite regress as each new and distinctive approach created its own ravines and abysses, border skirmishes and so on. Land (2012)’s succinct echoing of many of the epistemological and institutional difficulties underlines how reflexive one must become to do crossdisciplinary work.

Yet we have a dilemma: to permit or even encourage explicit disciplinary self-defence could be a step *backwards* by acting as a charter for disciplinary imperialism and in appearing to lend legitimacy to refusals to engage with other fields of expertise on a suitably humble and open-minded footing. I do not wish to go in that direction – we are not yet in a position to be complacent about interactive work in the academy but its value seems undeniable (see for instance the range of initiatives and variable outcomes of collaborative work in Walsh & Kahn, 2010).

Suffer the ‘Children’

There is more: postgraduates are almost certainly the group who suffer the most in interdisciplinary projects. Firstly, they do not have the luxury of waiting to see if the project bears fruit or not: they will have a viva all too soon.

Secondly, if obtaining a PhD is generally the point at which they internalise the threshold concepts and customs of their discipline (Kiley, 2009), they are unlikely to be dextrous enough to practice threshold guardianship: students may well be expecting their knowledge to fit together more cohesively than I have suggested it will. In practice, when their supervisors in different departments dodge the most incommensurable issues, the student, probably suffering from chronic liminality, is left to traverse the ravines alone in a high-stakes experiment.

Thirdly, they do not have a single group into which they can be assimilated and ‘get to know the ropes’: they must simultaneously enter more than one community – which makes impossible any persistent sense of immersion and naturalisation. In short, their PhD is almost primarily in interdisciplinarity itself, and in ‘subjects’, second.

The dynamics of disciplinary boundary work must, it seems, be made more explicit: not to do so simply because new members of our community unfairly and, if my argument rings true, rather dishonestly. How then might we do a better job of showing them a fuller picture of what disciplined academic life is like without empowering arrogant ‘discipline wars’ or the evasion of genuine interdisciplinary enquiry?

Distinction over Definition

One possibility is a promoting a culture of disciplinary *distinction* (identifying characteristic aspects) rather than definition (identifying dividing lines and borders). ‘Walls’ seem increasingly unhelpful as a metaphor. This could be done in academic practice or academic development circles. This in turn would make heuristics such as threshold concepts increasingly nuanced as we articulated ‘the way we do things’. And how might it end? It ends just the way it began and was then conducted: pragmatically, and in response to a contextual sense of ‘whether we have reasonably answered the question for our current purposes.’ Given that there is no realistic possibility of mastering every discipline one encounters, there is no other option than this kind of ‘immediate-need’ pragmatism, which is itself typical of ‘Mode 2’ knowledge: the conversation itself cannot be anything but an enactment of interdisciplinarity.

The potential role of (articulating) threshold concepts will be obvious, indeed almost unavoidable, if this approach is taken. If thinking about threshold concepts is useful pedagogically, the time is well spent just for that: but it might also provide a basis for more harmonious and humble interdisciplinary work. The evasions and defensive tactics that disciplinary tribes deploy to retain their integrity inevitably become more obvious in an interdisciplinary context because of the variety of immediately available vantage points and values: what one discipline wishes to sidestep may be of great interest to another. In a disciplinary setting, those values are (and must be) taken for granted but not so in interdisciplinary contexts where *no* value is self-evident. Nor can they be persuasively articulated because to do so requires a position that must itself assume values (Fish, 1994, 1995): these values are just as contestable. Once again, we face infinite regress.

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Threshold Concepts as Our Common Ground

Put differently, the interdisciplinary group does not have shared threshold concepts: even experts on rational decision-making (eg anthropologists and economists, or economists and epidemiologists) may immediately find themselves at loggerheads (see eg Douglas & Ney, 1998; Joffe, 2011). This is entirely harmonious with the notion of threshold concepts providing initiates with a distinctive gaze, but can easily become disruptive as academics move to defend or extend their disciplinary base. But, in the framework being outlined here, what they have in common is that, for our heuristic purposes, they *all operate with threshold concepts*. These do not compete or invite competition, but are discrete: they are the site of incommensurability. Framed thus as an inquiry into one's disciplinary framework, we are less likely to encounter bald statements such as 'history's not a proper discipline then' (as a chemistry PhD student once bluntly responded to me after I explained that interpretation can profoundly shape evidence in history). Threshold concepts are thus potentially a great leveller, and their articulation at some point, whether deliberately or piecemeal, is usually a necessary part of collaboration.

To some academics, of course, this might be unacceptably close to relativism, and indeed exposure to this kind of epistemic pluralism might well appear to complicate the transmission of 'true' disciplinary knowledge. For many students, also, it will be a challenge to encounter avowedly pluralistic regimes of truth, since, as every teacher knows, the cult of the 'right answer' is alive and well: claims to truth are *so* seductive (and the elucidation of 'claim' is harder even than the deconstruction of 'truth' much of the time). But such a move is hardly out of step with the rest of the university: in so many subjects, we are increasingly teaching students to deal with *not*-knowing (eg Barnett, 2000, Land 2012). There is, however, also the practical difficulty that so few academics can make authentic claims to expertise in more than one field or, to put it differently, the fact that successful interdisciplinarians typically struggle to get and/or retain employment (Lattuca, 2001, pp. 178–184).

Nonetheless, all kinds of possibilities for more reflexive and outward-facing disciplinary work beckon, with all the possibilities, challenges and difficulties that shared endeavours guarantee and what is often needed is ways for different 'tribes' to retain their integrity without impinging on others'. We would have to accept that knowledge *changes* in different contexts: as Fish (1995, pp. viii-x) puts it, '[social constructivist] accounts of how disciplines come into being are correct, but ... such accounts, rather than telling us that disciplines are unreal tell us just how disciplines came to be as real and as productive as they are'.

More urgently, and to bring the focus back to students, it may bring enormous relief to students who are trying to synthesise incompatible knowledge systems, not yet realising they are beyond the reach of ‘right answers’, to have this aspect of interdisciplinary work *deliberately* presented to them: incommensurability can then become an intriguing puzzle and a mystery that can be put aside or picked up as they need or choose rather than a set of dilemmas they must resolve (but never can).

Bringing ‘threshold guardianship’ out of the shadows could allow students to avoid being dominated by the conflicting demands put upon them by interdisciplinary work: it could create a much more level playing field for interdisciplinary work; and, if we place any stock in their pedagogic value, it would unlock all kinds of doors for teaching and learning.

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