

Complexities of interdisciplinarity: two (or three) into one will go

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Introduction

Interdisciplinarity is currently attracting attention, probably for a number of reasons. There is a sense, presumably, that many important questions and issues are not confined to a single domain of knowledge and require the perspectives and resources of different disciplines. There is also, and increasingly, a recognition that professionals who embody again differing perspectives, need to work together “in the real world”. Too often, tragedies have occurred partly, it transpires, from the inability or reluctance of professionals to engage together. So both theoretically and practically, the matter of interdisciplinarity deserves and is receiving attention.

But just how might interdisciplinarity itself be understood? Is the *interaction* to be characteristically between representatives of disciplines *or* between the disciplines themselves? It might be both of course; but, then, just how might these two ways of understanding interdisciplinarity be reconciled? It is this set of problems with which Angus McMurtry engages in his paper and his position amounts precisely to an attempt to legitimise both views of interdisciplinarity and to show that they are not mutually incompatible but can be held together. A full understanding of interdisciplinarity involves a coming together *both* of disciplines and their adherents.

However, perhaps a more beguiling thesis is possible, namely that this very matter of interdisciplinarity, significant as it is and as wide-ranging and complex as it is, needs now to be placed in an even wider context. The context in question is that of expanding definitions of knowledge in a knowledge-saturated world; and here, interdisciplinarity – effectively a matter of the conversations (or lack of conversations) among the academic tribes (Becher, 1989) – is but a side show in that larger world of epistemic anarchy. McMurtry identifies two approaches in comprehending interdisciplinarity; and the commentary below suggests widening the two approaches to three. But this is a largely internal debate within the academy. The much larger question is the ways in which academic knowledge relates to the knowledges in and of the wider world. The two (or three) approaches in understanding interdisciplinarity have to be placed in that larger epistemic world, if interdisciplinarity is itself to be comprehended in a satisfactory way. Two (or three) may go into one.

Interdisciplinarity: a local or universal matter?

As McMurtry himself observes, interdisciplinarity has itself been a topic of inquiry for decades; at least for four decades. And yet, it is surely fair to say that the topic still has a kind of fringe appeal. Despite the work of the committed enthusiasts, the topic is rarely a major means of organising academic life. Universities are still organized largely around disciplines or fields; academic identities are still for the most part located in definite disciplines or professional fields.

There are two readings of this situation. There is the conservative reading: academic life is and probably always will be dominated by disciplines, discrete bodies of knowledge and ways of going on that structure academic life and academic perspectives. Indeed, the tendency for knowledge production to be split into ever narrower framings – as the number of knowledge producers and their accompanying knowledge outputs grow – will only further exacerbate this tendency.

A more imaginative reading, however, is available. Despite evidence that the conservatives can bring, there is actually a major set of shifts going on in what might be termed the epistemological structure of the world. A growing interdisciplinarity is only part, so it might be considered, of this epistemological ferment. Here, too, the evidential base for this alternative reading is readily to hand. Knowledge is becoming more fluid or (to use Bauman's (2000) term) "liquid"; producers of knowledge abound outside the academy as we witness a greater democratisation of knowledge production; there actually is greater traffic across the disciplines, a move aided by knowledge management within universities, as groups are brought together to work on large multidisciplinary projects; digital technologies are themselves allowing knowledges to run into each other, into a "hyper-reality" (Tiffin and Terashima, 2001); and knowledge itself is seeing a shift towards the practical problem-solving domain.

It may be noticed that the so-called "Mode 2" phenomenon, of knowledge production being based much more around the solution of complex problems *in situ* in the world (Nowotny, Scott and Gibbons, 2001), is only part of this set of observations. It

is increasingly being recognized, for example, that professions and occupations have their own ways of going on; their own knowledges. And that, as stated, knowledge production, in a highly educated and knowledge-based world, is distributed across society. There are even the makings of systematic effort to plot the extent of knowledge production beyond the academy; and it may be found even in rather unlikely places. This too takes a number of forms: the academy – and not only in the hard sciences but also in the human sciences – is increasingly faced with mega data-sets and so is turning to the interested public to help it make sense of its data; or even in some cases to add to it; so-called “amateurs” are being observed themselves to be heavily involved in knowing activities such that amateur knowledge often turns out to be highly sophisticated (Finnegan, 2005); and the computer and corresponding technologies are making available huge technical power and informational resources at the very local level. This newly distributed knowledge production is also often imaginatively creative, and is increasingly multimodal in character (Kress and Van Leuven, 2001). So the Mode 2 thesis is already turning out to be grossly deficient. The twenty-first century is faced with multiple knowledges that are themselves fast increasing, not only in range but also in their form.

A quick and doubtless perfunctory sketch of this kind is perhaps helpful in the present context. It reminds us that any debate about “inter-disciplinarity” is a rather local affair. It is apt to be a debate about the distribution of and the relationships between knowledges within the academy when academic knowledge is itself a diminishing part of knowledge production in contemporary society. And nor should this be a surprise: after all, the knowledge society has to be, at least in part, a society in which the creation and *ownership* of knowledge is widely distributed.

But if a depiction of the wider – and indeed universal – context of knowledge production, ownership and dissemination along these lines is even partly accurate, it offers a broader context in which to understand interdisciplinarity in another sense. It is often remarked that organisations and movements join forces at moments of weakness rather than of strength. This being so, it may just be therefore that any moves towards inter-disciplinarity in the academy can be understood as an attempt by the academy to bring all its resources together at a time when its own definitions of knowledge are coming under some quite severe assault from the wider world. Or, to put it more generously, efforts on the part of the academy towards inter-disciplinarity can be seen as a move to maximise the impact of its key resource, its knowledge function, at a time when that very knowledge has to re-secure its wider social legitimacy.

It might be said that – a la Durkheim – this is a story of sacred and profane knowledge; but if it is that story, then it is so with a twist. For the twist is that the sacred status of the knowledge of the academy is now in the dock. At least, the academy cannot assume that its knowledge *does* carry a sacred status in contemporary society; rather it has to go on demonstrating and securing its legitimacy. At the same time, many of the new rival knowledges are quickly being accorded near sacred status. It is now no longer clear to which knowledges the titles of “sacred” and “profane” belong (cf Wheelahan, 2010).

The complexities of interdisciplinarity in-itself

The complexities of interdisciplinarity, therefore, are turning out to be highly complex indeed. There are the intra-complexities, of the kind to which McMurtry draws our attention (is the conversation between disciplines or is it more between their adherents?); *and* there are the complexities between interdisciplinarity and the wider world, made more problematic through the growth of knowledge in and across the knowledge society.

The complexities of interdisciplinarity, however, are far from exhausted. There is, firstly, a problem that is implicit in McMurtry's analysis but which deserves to be brought out more fully. In understanding interdisciplinarity in itself (so to speak), we are offered a juxtaposition between "irreducible differences in 'the real world'" on the one hand and "socio-cultural dynamics with and among the 'knowers' doing the studying". Of course, once distinctions start to be made, they can always be multiplied! There is, in particular, one further dimension that can perhaps be disentangled (and it is, I think, implicit in McMurtry's account).

As well as pointing to differences among things "in the real world" and among the knowers doing the studying, we can also point to differences among disciplines themselves. Certainly, differences among disciplines could be collapsed into either a story about things in the real world (since the world has different things in it, systematic efforts to understand those different things (their "disciplines") will themselves be bound to be different) OR a story about the dynamics between knowers (since knowers assemble themselves into different communities of practice, it is inevitable that their perspectives (their "disciplines") will differ). Either way, it could be alleged that pointing to disciplines does not really disturb the distinction between "irreducible differences in the real world" and "socio-cultural dynamics among knowers". I'd like to suggest, however, that disciplines constitute *in themselves* an important third realm in understanding inter-disciplinarity. We can't fully understand inter-disciplinarity unless we attend to understanding disciplines in their own right. So I want to posit a three-dimensional approach to understanding interdisciplinarity: (i) how things are in the world (ontology); (ii) our ways of understanding how things are in the world, including notions of the relationship of our propositions to the world and to each other, within and across disciplines (epistemology); and (iii) our ways of organizing those knowing efforts (socio-cultural aspects of knowing).

Opening up our understanding of interdisciplinarity in this way of course makes more complicated their inter-relationships. The relationship between (i) ontology and (ii) epistemology is crucial here: the two are separate but surely interact in subtle ways. We can insist – as both Popper (with his *Principle of the Three Worlds* (1975)) and Roy Bhaskar (with his three-fold depiction of the structures of the world (2011)) – on their distinctiveness: there are things in the world and there are our ways of engaging with them (formed of disciplines); but their inter-relationships are significant too.¹

¹ To run Popper and Bhaskar together like this is to do injury to Bhaskar (who has distanced his own position from Popper's) *and* it is to do separate injury to both of their positions, if only

Firstly, disciplines do not inquire into their “own” objects, as if there are discrete clusters of objects sitting in the world waiting for inspection by discrete disciplines. Often, disciplines will look at the *same* entity; or the same term may be taken up by different disciplines. For example, the matter of perception can be – and has been – a topic of inquiry by biology, sociology, psychology, cultural anthropology and philosophy. But, secondly then, the distinction between things in the world on the one hand and disciplines – even though I have just insisted on it – begins to dissolve somewhat. Ultimately, it becomes a moot point as to the extent to which an entity – say, perception – is in the world and is also held in disciplines. This is far from a merely pedantic or arcane point. For different disciplines may contain different *pragmatic possibilities*: it just may be that some disciplines implicitly see the world as more malleable than other disciplines.

Linked here is the matter of the relationship of entities in the world to humanity and human values in our knowing efforts; and here enters the third realm of interdisciplinarity – of the socio-cultural dimensions of disciplines. As McMurtry underscores, disciplines are not static and part of their dynamism is generated by the dynamics in and between knowers, at both psychological and socio-cultural levels. Accordingly, knowers will have their own values and conceptions of their disciplines; their disciplines in turn may be put to all manner of social and human purposes, perhaps benign, or beneficial or even pernicious (cf Barnett, 2003). These knowers are likely to construe the pragmatic possibilities of their disciplines in different ways.

Layers of possibilities

What, then, follows from this discussion? There are, within any efforts in promoting interdisciplinarity, four domains: the phenomena or concepts that form the object(s) of an inquiry; the professional fields or disciplines from which those phenomena are viewed; the inquirers themselves, whether they be lone scholars or large cross-national teams (who would have their identities within wider epistemic communities); and the interconnections between such interdisciplinary efforts and the wider world. Each of these domains itself – following McMurtry – can be said to constitute a complex, being a dynamic structure. Each such structure can be understood both as a network and as a space of spaces: the spaces are to be found between the nodes – or points of force or influence or interventions – characteristic of each domain (cf, Castells, 1997). These four domains of interdisciplinarity are both layered on and conjoined with each other. Complexity is inherent in these formations and their inter-linkages.

There is a yet further dimension at play, which is captured in the distinction between complexity and supercomplexity. Crudely, we may say that complexity refers to an open-endedness and unpredictability in the way in which systems (whether man-made or natural systems) behave. Supercomplexity, on the other hand, refers to an

because they are each positing a three-fold structure to the world, whereas I am simply at this point pointing to a bifurcated world. However, later in the paper, I go on to offer my own triple-fold structure.

openendedness and unpredictability in concepts and ideas (Barnett, 2000). It is a higher order of complexity – hence supercomplexity – since, in supercomplexity, the very terms in which complex systems are to be understood are liable to be disputed (and are often disputed).

In supercomplexity, our very representations of the world – through which we might seek to comprehend complex systems – are themselves disputed and those disputes give rise continually to new representations of the world. Of the increase in concepts and ideas, and hence in their incompatibility, there is no end. Supercomplexity is signalled, for instance, in a question of the form “What is a doctor?” or “What is a university?” or “What is a social worker?” There can be no end point in answering such questions: they are open to infinite interpretations, which are themselves partly reflective of different value positions and contrasting conceptual frameworks; and these interpretations of the world continually expand and offer unresolvable clashes in the domain in question (such as medicine; higher education; and social welfare).

Supercomplexity is characteristic of interdisciplinary work, for *there* is to be found multiple, rival and incommensurable framings of the world. (A full account of the nature of such rival representations of the world would entail an account of the interactions between our four levels of interdisciplinarity – the phenomena in question; disciplinary perspectives; inquirers; and the wider world.) Supercomplexity is essentially a story about epistemological complexity (about the insecurity of our attempts even to frame the world that we are trying to comprehend) but it has ontological implications, both about the phenomena in the world (including the notion of being “in the world”) and about the in-the-world-ness of the inquirers themselves. A sensitivity to the supercomplex character of interdisciplinarity cannot but alert us to the multi-layered character of interdisciplinarity; and the subtlety and complexity of the relationships between those layers.

Conclusions

We are moving towards a liquid world of knowledge, if we are not there already. And this fluidity affects the very definitions of knowledge: just what is to count *as* knowledge in a liquid age? Interdisciplinarity is but a symptom of this liquid state of knowledge. That is to say, interdisciplinarity is increasingly apparent: it is already a feature of our epistemic world, as much as it might be a situation devoutly to be wished for. Knowledges expand, they multiply, they break out in new situations, they take new forms, they have new owners and they dazzle with their fecundity and daring. In such an epistemic anarchism, a growing interdisciplinarity is inevitable. But note its new form: this interdisciplinarity goes beyond an exchange, however lively, between disciplines; now it shows itself as inter-knowledges. Propositional and practical; professional and amateur; material and virtual; descriptive and normative; durable and ephemeral; textual and iconic; static and dynamic; singly owned and multiply-owned; “smooth” and “striated”: all these and many more characterise contemporary knowledges and their inter-relationships. This is not just a complex but a supercomplex

world, in which the very definitions of what it is to know are no longer sure (the universities having lost their powers as epistemic legislators).

Inevitably, there are – in this maelstrom – issues of what is it that is known; the means of knowing (“disciplines” or epistemic carriers, as we should perhaps term them now); and of the knowers themselves. “Interdisciplinarity” makes vivid these matters precisely through the contrasting phenomena, perspectives and epistemic communities coming into view at one and the same time. Interdisciplinarity works in these three domains; and so problems abound about these three domains and their interactions. But the more radical thesis is that, in an age of multiple, expanding and even antagonistic knowledges across society (philosophy and theology depart the scene to be replaced by “ethical computing” and “music technology”) the very notion of “interdisciplinarity” is itself problematic. The term itself is redolent of relatively fixed, known and discrete bodies of knowledge (“disciplines”) when we are now faced with knowledges as fluids in messy multiplications. We are confronted with what has been termed “ethno-epistemic assemblages” (Irwin and Michael, 2003).

The “ethno” in that phrasing of Irwin and Michael is crucial for the problem of interdisciplinarity now becomes a problem of how are we to live in a world in which the very vehicles for securing a hold on the world – “disciplines” – are giving way to slippery and chaotic forms of comprehending the world. And this is a world in which there are no ultimate rule setters, let alone rule enforcers. In an internet age, all manner of creative claims to knowledge arise. The complexities of interdisciplinarity turn out to be an even larger issue as to the complexities of *being* in the world, where our innermost presuppositions as to what it is to know are themselves fragile. Taken seriously, the epistemology of interdisciplinarity has to give way to the matter of being and becoming among liquid knowledges.

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