

[7827 words]

Becoming interdisciplinary

Willard McCarty

Abstract. Actual discussion of how to do interdisciplinary research is rare, although the abstraction “interdisciplinarity” is a popular topic and frequent claim. This abstraction, its treatment as a transcendental good and the assumption that it is chiefly an attribute of collaborative teams divert critical attention from the question of how the attempt to expand beyond one’s discipline of origin is to be made, whatever the circumstances of research. Here I offer no method or choreography, rather encouragement, qualification, commentary and some tips from years of following bibliographic and now also hypertextual trails. I offer advice and strategies of wayfinding for an endless exploration of other epistemic cultures and some reflections on its possible effects.

Keywords: interdisciplinary research, epistemology, epistemic cultures, disciplines, knowledge, curiosity, ethnography, natural sciences

What makes bad poets worse is that they read only poets (just as bad philosophers read only philosophers), whereas they would benefit much more from a book of botany or geology. We are enriched by frequenting disciplines foreign to our own.

Emile M. Cioran (1973)ⁱ

1. Being curious

Temptation to explore the knowable and the ease with which exploring may begin have increased many-fold in recent years due to the Web. As a result being curious may seem remarkable only in its absence, and only its censure abnormal. Conviction of its utter normality is bolstered by Aristotle's testimony that the desire to find things out is basic to humans,ⁱⁱ and by Edmund Burke's that it is "The first and simplest emotion which we discover in the human mind" (1757, 1). Primatologists and ethologists since Darwin have observed curiosity among "the higher animals... similar passions, affections, and emotions, even the more complex ones".ⁱⁱⁱ At least behaviourally if not cognitively, blurring into the hunger of life for life, it would seem reasonable to suppose that curiosity in some sense does not stop with Darwin's "higher animals" but is synonymous with being or even becoming alive. Konrad Lorenz has written in *The Foundations of Ethology*, on "Exploratory Behavior or Curiosity", that

A free play of innumerable factors, a play neither directed at any goal nor predetermined by any cosmic teleology, a play in which nothing is determined except the rules of the game has, on the molecular level, led to the origin of life. It has caused evolution and moved phylogenetic development in the direction from lower to higher organisms.... It would seem that this free play is the prerequisite for all truly creative processes, for those of human culture just as for those of evolution. (1981/1978, 334)

But what individuals and societies actually do with this inherent, biologically rooted if not cosmic tendency to free play is another matter. G. E. R. Lloyd has, for example, detailed the struggle in ancient Greece and China between the freedom to look anywhere, ask anything, and the beholdenness which ensures continuity across time. At the end of *The Ambitions of Curiosity* he concludes that against the constraints they faced these "were often just that, just ambitions. But what ambitions: for in one context after another, they held out the hope of understanding what had never been understood before" (2002, 147).

I begin with conflict of the fundamental urge to *know* (in the full sense Heinlein rescued in *grok*)^{iv} against an equally fundamental resistance so that both remain firmly in sight as I take up curiosity's interdisciplinary manifestations. Given our time and place, this urge to know may only appear

in the ghostly form of a mundane duty or means of advancement, and resistance to it be mistaken as an irrelevant historical artefact. The strong inducements from funding agencies and universities to lay claim to interdisciplinary research may wrongly suggest that professionalized curiosity is merely part of an academic job-description, that it is only a matter of acquiring “domain knowledge”. Hence we may also conclude that the old moral injunctions, weighted with the authority of Augustine and Aquinas among others,^v against a “blameable... disposition to inquire too minutely into anything” and “inquisitiveness in reference to trifles or matters which do not concern one” – senses the *Oxford English Dictionary* marks obsolete – have no modern form. But Lloyd’s careful exploration of the ancient struggle and Lorraine Daston’s well informed reminder that “Curiosity has never been allowed free rein” (2005, 36) recommend that while keeping in mind the “free play... neither directed at any goal nor predetermined by any... teleology” we ask not whether but how resistance manifests itself to us and how to equip ourselves for the struggle of the freedom to enquire against beholdenness to disciplines.

In this chapter I will first briefly consider the historical push to interdisciplinary research and the growth of interest in curiosity in order to justify explicit attention to exploration of disciplines other than one’s own. I will then bring the difficulties into focus, discuss the aims of interdisciplinary research and some practical strategies.

A warning: my approach fits somewhat uncomfortably into the burgeoning literature on the subject, which in the last decade or so has orbited the abstraction called “interdisciplinarity” and devoted considerable energy to its inter-, multi-, trans- and other relations.^{vi} I take the view that in dicing and re-dicing the *what*, this literature has not paid enough attention to the *how* (whatever good may have been done for the sociology of knowledge). In consequence it has been less than helpful to the adventurous but inexperienced scholar and to the discussion of changing research practices as a whole. Much of this literature begins with the abstraction and as a result gets stuck in taxonomic debate that from my perspective is a *Glasperlenspiel*.

2. Recent history of interest

The term “interdisciplinary” (or “interdiscipline” used adjectivally) goes back to the young social sciences in the early 20th Century. Despite the enormous impetus to and development of interdisciplinary research in the sciences during World War II, the word was still new enough in 1976 that the founding editor of *Interdisciplinary Science Reviews* felt the need to note that it “is a relatively new term, although its concept reaches back to the beginnings

of modern science” (Michaelis 1976, iii; 2001, 310). In 1979 the Association for Integrative Studies was founded.^{vii} In the following year Clifford Geertz observed for the social sciences that “the lines grouping scholars together into intellectual communities, or (what is the same thing) sorting them out into different ones, are these days running at some highly eccentric angles” (1980, 169). Writing in 1988, in a valuable history of the word, Roberta Frank noted that it had “started out with a reasonably bounded set of senses [but] subjected to indecent abuse in the 50s and 60s... acquired a precocious middle-aged spread” (1988, 139). That spread has expanded just as interdisciplinary has become a thing to be taxonomized. In 1990 William H. Newell’s edited collection *Interdisciplinarity: Essays from the Literature* demonstrated a thoughtful and widespread interest. Now “interdisciplinarity” has the attention of a 580-page *Oxford Handbook* (Frodeman, Klein and Mitchell 2012) and many other signs of a vigorous industry.^{viii}

Mainstream attention to curiosity has likewise grown dramatically in recent years. When at the beginning of the 1980s Michel Foucault spoke of his “dream of a new age of curiosity” (1996/1980, 305), and Lorraine Daston and Katharine Park published their first study of marvels, prodigies and curiosities, academic interest in the topic was rare, they note.^{ix} By 1998, when their book, *Wonders and the Order of Nature 1150-1750* was published, “Wonder and wonders [had] risen to prominence on a wave of suspicion and self-doubt concerning the standards and sensibilities that had long excluded them (and much else) from respectable intellectual endeavours” (1998, 10).^x Since then several other signs of interest have appeared, for example Brian Dillon’s *Cabinet* (2000-), a magazine intended “to encourage a new culture of curiosity”;^{xi} Barbara M. Benedict’s *Curiosity: A Cultural History of Early Modern Inquiry* (2001); Neil Kenny’s *The Uses of Curiosity in Early Modern France and Germany* (2004) – “timely now that once again curiosity is being nudged into the cultural limelight”, Daston commented in her review (2005); and Dillon’s 2013-14 travelling exhibition *Curiosity: Art and the Pleasures of Knowing*, accompanied by a catalogue with essays by him and Marina Warner (2013).^{xii} “The world at large, in all its glory or stupidity, is wide open for investigation”, Senior Curator Robert Malbert declared enthusiastically in his Foreword to the catalogue (2013, 9).

The moment, it seems, is upon us.

3. Curiosity’s machine and the individual

Unsurprisingly curiosity’s digital machine has been intimately involved. In a sense this chapter is an educated guess as to the outcome for the humanities.

But we do not have to guess entirely in the dark. Without yielding authority to the physical and biological sciences, we can get some insight from observing changes in them, where there can be little doubt that, as John von Neumann foresaw, computing is bringing about “nothing less than the second half of the scientific revolution” (Glimm 1990, 185). According to many voices at the Blankensee Colloquium of 2007,^{xiii} for example, the pressure to conceive scientific “theories and models... as computable from the outset” has become increasingly difficult to resist. Consensus seems to be that in many areas of research, models and theories “will become decreasingly successful” if not “conceived from their conception as computable”.^{xiv} What these sciences do and what they do not do in consequence, or even what becomes inconceivable within them as a result, and so what it means to be a science, would seem in question.

In the humanities attempts at corresponding algorithmic power for analysis have had limited success at best. The effects of curiosity’s machine have come principally through slowly growing digital collections of primary sources and secondary literature. In consequence the great majority of scholars have had less than 20 years to experiment with these effects.^{xv} During this time they have been lumbered by the weak and operationally misleading analogy implicit in the notion of a “digital library”, which has tended to obscure the great differences of action. At one time not so long ago the name of the game for digital collections was “information retrieval”, a phrase splicing epistemic data to old library structures and habits. Experts defined the ideal to be the impossible combination of perfect precision (the relevance of retrieved items) and recall (the percentage of relevant items found). But classical information retrieval in fact works quite poorly, especially for the humanities – the disconnect between the meaning we seek and its encoding in character-strings is simply too great. More sophisticated mechanisms do much better by following what our and others’ actions show we want rather than what we say we want in Boolean language. They do not so much filter out the irrelevant as more effectively locate possibilities likely to tempt us. The irony is that the failure of these mechanisms (especially the Boolean ones) to aid specialist enquiry offers a far greater though traumatic benefit to scholarship, bringing together, say, articles belonging to English literature with others in theoretical biology, medieval history, anthropology and cognitive science. Who could not be curious? I wish I could say, no one.

This I call the default condition of research in the 21st Century. It is what happens when you, I, our colleagues and students use JSTOR, for example, though again we may choose to deny the temptations. Some recoil from what they see as infoglut. But from the perspective of research, which by nature

cannot arrive at a final *result*, for which the brick-in-the-wall metaphor of knowledge is all wrong,^{xvi} what we get isn't necessarily debilitating chaos but potentially a fructifying though traumatic cornucopia. And so my immediate question is how we are to deal with plenty in the form it now takes.

In other words, the problem that concerns me here is the imminent consequence of so much genuinely meaningful diversity. We are all aware of the threat to focused research posed by centrifugal proliferation of intriguing possibilities. We all know well the frustrations of being lured into time-wasting bouts of online prowling that yield cascades of material as impractical to explore as they are compelling – and unusable unless explored. This, I know, is not strictly new. It is also the peril that has always lurked in any research library. But for obvious reasons it is so much easier to be waylaid, so much easier to succumb. One is so much more likely to encounter material that formerly would have been found on another floor or kept in another, perhaps distant building. So what do you do?

The initial problem is an old one. A well-known historical example of an attempt to deal with it is Vannevar Bush's rear-guard response at the end of World War II to the "growing mountain of research" which, he said, the investigator "cannot find time to grasp, much less to remember".^{xvii} In celebrating Bush's imagined Memex, however, we tend to overlook the fact that he designed it to aid specialization "increasingly necessary for progress", not to unbind the book, break down disciplinary fences and all those other things his Memex is said to have inspired. We overlook his view in "How We May Think" that "the effort to bridge between disciplines [is] correspondingly *superficial*" (1945, 101, my emphasis). Bush's geometrical metaphor (*superficies*, having length or breadth without thickness), though undoubtedly intended as merely a common adjective, makes the point elaborated in another context by Richard Rorty (2004/2002): that the implicit model of knowledge at work here privileges singular truth at depth, reached by the increasingly narrower focus of disciplinary specialization, and correspondingly trivializes plenitude on the surface, and so the bridging of disciplines. Hence the epistemic question that the Web makes so difficult to avoid: is this plenitude *only, necessarily* trivial or trivializing? Must its interdisciplinary pursuit be conceived as mentally enervating? Is depth of knowledge necessarily and always good – or, as we say revealingly, *profound*?

The obvious answer, no, leaves us with a problem of practical epistemology: how then do we do research? Rorty argues from Gadamer that we are faced with an entirely different way of conceiving the pursuit for truth, not going deep to find the one answer but going wide to collect many witnesses, many views, then filtering, sorting and reclassifying according to the question at

hand (2004/2002).

4. The aim and the difficulties

As curious enquirers empowered by curiosity's machine and encouraged to do interdisciplinary work, what is our goal?

I have entitled this chapter "Becoming interdisciplinary" with care, not only to focus attention on individual practice but also to answer the charge levelled against all such work by Stanley Fish in his formidable interdiction, "Being interdisciplinary is so very hard to do" (1989). The title is deliberately ironic: he argues that it is *impossible* to be interdisciplinary, warning his reader off in a relentless, closely reasoned argument.

His target is more serious than the many specious claims to interdisciplinary work and the handwaving that attends them. Fish's concern is with the goal of *achieving* a neutral, *perfectly* interdisciplinary standpoint, and so with the claim to a kind of absolute truth transcending all disciplines – a panoptic god's-eye view from which they might all be observed doing their limited things. (The claim to the panoptic view lurks, for example, in the casual rhetoric about "breaking down" the boundaries that disciplines construct and police, to make from a partitioned landscape a great open field of knowledge. Indeed the very idea of the panopticon is illuminating.^{xviii}) I think we must agree with Fish thus far, that such a goal is delusional – this side of godhead no such perfect neutrality is possible and that belief in it is dangerous in its programmatic absolutism. I refer you to his article for the details. But what I would like you to note here in particular is his further, and I think quite wrongheaded, assertion that *attempting* a broader view is therefore not only doomed but also morally wrong.^{xix} Such a fundamentalist position would by analogy have us argue that one should abandon *any* attempt to be good because achieving perfect goodness is, as we all know, impossible. Just as we, knowing that being perfectly good is unachievable, do not run amuck but try our best, should we not strive to extend ourselves beyond what we have been conditioned to know in the ways we have been conditioned to know it? Isn't that what education is for?

Those other than Fish who have considered the problem seriously – I name only Gillian Beer (1996, 115-45; 2006), Greg Dening (1996, 39-41), Thomas Kuhn (1977, 5-6), Marilyn Strathern (2004), Peter Galison (2013) and Myra Strober (2010) – attest that making the attempt is severely challenging. We learn from them all, and from many others who have written on the topic,^{xx} but my focus here is narrower. Strober's sociological concern is with colleagues in university departments and how they might most productively

combine their research interests. Her interdisciplinary is the collaborative kind. Strathern's anthropological and Galison's historical concerns are with interchanges of knowledge and knowledge-objects between established groups across what Galison has called "the trading zone". Mine here, like Beer's, Dening's and Kuhn's, is with the individual rather than with groups, with cognitive rather than professional strategies. On the basis of my own experience in making the attempt (but necessarily always falling short), I want to sketch out what is involved. Whether alone in the study or together with others in a research team, the individual faces the same challenge in attempting to take on a foreign disciplinary culture. So, I would argue, the broad relevance of the individual's dilemma to scholarship, whether alone or in teams.

In *Open Fields: Science in Cultural Encounter* (1996) Beer reflects a lifetime of experience. "Interdisciplinary work crosses over between fields", she writes: "it transgresses. It thus brings into question the methods and materials of differing intellectual practices and may uncover problems disguised by the scope of established disciplines" (1996, 115). Elsewhere she enumerates the hazards:

how to distinguish what's central from what's peripheral in this other zone; how to tap into the hinterland of controversy that lies behind the works on the shelf; how to avoid becoming merely disciples because not in control of a sufficient range of knowledge.... The converse of this is true as well: the problems preoccupying those working in another discipline may sometimes (initially, arrogantly) seem quite simple – because we are not familiar with the build up of arguments across time that has reached this moment of dilemma.

And then, crucially, there is the matter of competence.... Others have spent years acquiring the skills that the interdisciplinarian needs. Is this a raiding party? Is there time to question and to learn? How much must be taken on trust? Are we accessing others' materials but still applying the mode of analysis learnt in our native discipline, or are we seeking new methods of analysis too? Either of these approaches may in fact yield fruit. And it is essential that we do not abandon the long learnt skills that go with our own disciplinary formation: they will be fundamental in any contribution we can make to new knowledge. (2006)

And then there is the profound intellectual trauma that attends the understanding of what is involved. Kuhn (philosopher, historian and physicist) wrote from his belief in disciplinary incomensurability of "a personal wrench, the abandonment of one discipline for another with which it is not quite compatible" (1977, 5). Here Karin Knorr Cetina's term "epistemic culture" is suggestive (1991). It connotes the integrity of disciplines as social institutions, their internal coherence, the respect for them we find in those who have explored most successfully beyond the limits of their own – and the

culture shock that movement among them entails.

For my purposes here I take disciplines, then, as autonomous epistemic cultures from which explorations begin and to which they usually return, bringing change with them. Each of them, including the one you start from is characterized by a “normal discourse”, as Rorty has called it. However permeable or open, each thus orbits “an agreed-upon set of conventions about what counts as a relevant contribution, what counts as answering a question, what counts as having a good argument for that answer or a good criticism of it” (1979, 320). These conventions are seldom if ever written down; agreement is mostly or entirely tacit, embodied in works of scholarship taken by consensus to be exemplary – for a time. Rorty notes that his idea of “normal discourse” is a generalisation of Kuhn’s “normal science”, and that as in Kuhnian science, disciplinary normality is from time to time upset and refigured by revolutionary changes in a field. For the interdisciplinarian these are events to learn from.

Disciplinary normality is policed – sometimes not too strong a term for the passionate attacks on new ideas.^{xxi} More serious is the silent way in which, as Denning notes, disciplines function as “ways of making a blinkered view of the world seem mythically true” (1996, 40), hence other views wrong, insignificant or even undetectable. For this reason, in proportion to differences in its conventions, research in a discipline to which one is alien is difficult to see as good research, or even to see as research at all. (Imagine from an old-fashioned philologist’s likely perspective what publications in computer science or in cultural studies would look like, and *vice versa*.) The outsider presenting to insiders is apt to be greeted by incomprehension, misapprehension, indifference, hostility – or, what is worst of all, he or she may not be heard as saying much of anything, as if a tiny insect had flown into the room and was making a barely audible, slightly annoying buzz.

In its etymology “barbarian” encodes the socio-intellectual problem becoming interdisciplinary aims to overcome.

5. The meta-discipline of interdisciplinary explorations

I have argued that the interdisciplinarian cannot get away from his or her discipline of origin, at least not completely, and I have implied that the more disciplines he or she investigates the more diversely enculturated he or she will become. And I have hinted in my reference to epistemic cultures that interdisciplinary exploration itself cannot be innocent of disciplinary guidance, that there must be a meta-discipline at play, i.e. social anthropology.^{xxii} Let me now bring that meta-discipline into the open.^{xxiii}

If disciplines are epistemic cultures in the anthropological sense, then we have not just silos or islands of knowledge but islands populated by communities of knowers, their languages, habits, histories and artefacts. I referred earlier to Galison's trading zone, which applies chiefly to contact between disciplines motivated, as traders are, by their own agendas. Thus, in the transfer of objects from one to the other, Galison describes "a partial peeling away, an (incomplete) *disencumbrance* of meaning" (1997, 436). The interdisciplinarian may only be wanting a like depth of contact, but here I am assuming the objective to be more than that – to be acquisition of what Clifford Geertz calls, with care, "the native's point of view" (1983). In one place he describes the "characteristic intellectual movement... [as] a continuous dialectical tacking between the most local of local detail and the most global of global structure in such a way as to bring them into simultaneous view" (1983, 69); in another as "a Jamesian hum of buzz and implication... [a] double image, clarity from a distance, jumble up close" that "critiqued, developed, filled out, moralized upon, and brought to bear on more exact experiences... turned into my most general conception of what it was that was driving things" (1995, 13). For the ethnographic historian Greg Dening, whose Oceanic natives and European strangers vanished long ago, all such explorations are performances "on the beaches of the mind" (2002). *The Death of William Gooch: A History's Anthropology* (Dening 1995) is a magnificent, inspiring example.

By singling out two of the scholars to whom I am most indebted I may seem to be in imminent danger of falling into one of the traps Beer warns us against: becoming a mere disciple "because not in control of a sufficient range of knowledge" – which is, I must admit, a fair warning. But I offer Geertz and Dening not as icons for your mantelpiece but to illustrate the beginnings of a way of finding structure and methodological guidance. The fluid combination of distance and intimacy in interdisciplinary exploration is otherwise very difficult to navigate. One could do *much* worse than those two, though many others have thought extensively about ethnographic practice and may provide better help in different circumstances. But whether there is a more effective meta-discipline I very much doubt.

The range of possibilities in interdisciplinary research is from theft to assimilation. At the former extreme is Beer's "raiding party", which we can see frequently occurring in the poaching of equations, methods and other expressions of process from one discipline for use in another.^{xxiv} Such is also characteristic of creative artists, who take and adapt with equally little regard for the source. It can be seen in the long-term behaviour of disciplines or whole groups of them, e.g. the "refiguration of social thought" brought about

by a shift of influence from the natural sciences to the humanities (Geertz 1980). The effects can be disastrous^{xxv} (cf. Franck 2002). Now, with consensus on the importance of material culture and its “thing knowledge”,^{xxvi} we cannot doubt that poaching has its not always foreseeable consequences.

At the other extreme is the one-way migration, to establish a new discipline (e.g. molecular biology, digital humanities) or to resettle in an old one as an ex-pat.

Between these two is what seems to me the ideal – a combination, not compromise, of centrifugal freedom and centripetal beholdenness. This is expressed, for example, by Northrop Frye in *On Education*: “every field of knowledge”, he writes, “is the centre of all knowledge... [I]t doesn’t matter so much what you learn when you learn it in a structure that can expand into other structures” (1988, 10). Such would seem what Ian Hacking describes in his role as “complacent disciplinarian” (2004): “not interdisciplinary in the sense of trying to break down disciplinary boundaries, but rather a philosopher who tries to be disciplined enough to pick up what is going on in other disciplines.”^{xxvii}

6. The how

Interdisciplinary research is like the ordinary curiosity-motivated kind in that it is exploratory and unpredictable within the domain to be explored. But (to paraphrase Beer) because the interdisciplinarian brings into question the methods and materials of a differing intellectual practice, possibly uncovering problems disguised by the scope of the discipline under investigation, the security of that discipline’s embrace is unavailable. Again the interplay of freedom and beholdenness: while the constraints of the foreign discipline must be recognized and respected, the interdisciplinarian struggles to be as much free of them as of those belonging to his or her discipline of origin. In a sense Alan Rauch is right, that the help we need is to “find our way in a world that is always already interdisciplinary” (Austin et al. 1996, 274) – so long as we understand this to mean both that no one gets it quite right and that no completely right take on it is to be had.

Basic skills that are required begin with the old one of following trails in books and articles through their footnotes and bibliographies, watching for repetition of references to the same source that signals its regard within its discipline’s normal discourse. Reviews are an obvious way to measure the reactions of a discipline to new work. Edited collections (despite the ill-deserved contempt in which they are held by “research excellence” exercises) can be invaluable, especially if they set out, as they often do, to give a

synopsis of research in the discipline. So also special issues and dedicated sections of journals devoted to themes important to particular disciplines. Deliberately crafted presentations to outsiders can likewise be valuable, for example contributions to Oxford University Press' *Very Short Introductions* series; overviews commissioned by professional societies for their websites; and explicit gestures from individuals, such as Peter Berger's well known *Invitation to Sociology: A Humanistic Perspective* (1963) and his later reversal in "Sociology: A Disinvitation?" (1992). Public lecture series frequently give senior scholars the opportunity to take just such an overview as the interdisciplinarian would wish for, e.g. the BBC Reith Lectures and the American Council of Learned Society's Howard Homer Haskins Prize Lectures.^{xxviii} Colleagues and friends can sometimes be helpful, but often a native informant will be influenced too much by a particular school of thought within a discipline to be useful.

Native informants are also likely to be so caught up with the current state of the discipline that they not only lack the overview you need but also miss what I like to call the trajectory of the discipline, its long-term direction or sense of purpose, which they may lack the perspective to see. Looking back to origins may help. In *The Muse Unchained: An Intimate Account of the Revolution in English Studies at Cambridge* (1958), E. M. W. Tillyard argues that, "When a new freedom comes into being, the kind of thing it leads to depends largely on the characters of the people who first enjoy it.... Thus it follows that any fitting account... must deal largely with persons and their characters.... It must have as its main topic certain people: by what accidents they became involved... what ideas they had, and how they translated them into action" (11-12). As I've argued elsewhere for digital humanities (2013, 46), we know from various sources that social phenomena are marked, often indelibly, by the historically specific contexts of their origins. They are, as we say, *imprinted*.^{xxix} So, there is strong argument in favour of the writings of founders. A good example of a recent case is cultural studies, for which the works of Raymond Williams and Richard Hoggart are particularly important, e.g. for Williams his luminous essay "Culture is Ordinary" (2001/1958). Such originating works may lead to others commenting precisely on what made them foundational, thus Terry Eagleton on Williams in "Resources for a journey of hope" (1989) and Lindsey Hanley on Hoggart in her introductory essay to the recent edition of *The Uses of Literacy: Aspects of Working Class Life* (2009).

Just as colleagues and friends may be helpful, so also popular cultural materials, e.g. again for cultural studies, the BBC television drama *The Chatterly Affair*, on the obscenity trial at the Royal Courts of Justice in 1960 against D. H. Lawrence's *Lady Chatterly's Lover*. In that trial Hoggart (played

accurately by David Tenant) gave crucial testimony that led, as you may know, to the funding which made possible the inaugural center for cultural studies at Birmingham, by the grateful publisher of the novel, Penguin Books. In following such leads, one strays far from the confines of rigorous scholarship, but so do scholars in their ordinary lives. To paraphrase sociologist Maurice Halbwachs and anthropologist Mary Douglas, while interdisciplinary understanding of a problem can draw strength from a base in a socially organized body of people, it is individuals who understand and so must be understood; the group is not mind writ large, rather the mind of the individual is the group writ small and made intellectually coherent.^{xxx}

7. Digital humanities

I have so far avoided discussing two things: the particular situation of digital humanities among the disciplines, and cookbook procedures for interdisciplinary research.

The latter I will not do. A comparison of any introductory handbook on ethnographic method to the writings of such as Geertz and Denning will demonstrate how much is lost and how much distorted by reducing a powerful role to a set of rules or textbook account. As Geertz's famous description of the Balinese cockfight makes clear, his and his wife's "sudden and unusually complete acceptance into a society extremely difficult for outsiders to penetrate" did not come from a "generalizable recipe for achieving that mysterious necessity of anthropological field work, rapport" but from their own equally sudden and complete acceptance of village life in a telling moment (1972: 4). It's unlikely that interdisciplinary fieldwork will ever be quite as memorable as that cockfight, but the principle is the same and stands persuasively against any attempt to describe how to perform the role this chapter has sketched its way around.

The former, to consider interdisciplinary research from our starting point in digital humanities, is unavoidable in the context of the *New Companion* and important also because this discipline's nature is unique. I can see three ways in which it is, with corresponding points to be made about becoming interdisciplinary.

First, digital humanities is new. Although it has been practiced for over six decades, self-awareness only came to the discipline in the last decade, with the publication of the first *Companion* in 2004 and my own *Humanities Computing* in 2005. Because it is new, the discipline needs help from its peers. Just as physics at its beginning took from the arts and crafts, mechanics and mathematics and made something different from them, so also digital

humanities must take as need be and transform what it takes. All outward explorations from any discipline into others render it vulnerable to being diverted by tacit thing knowledge, as I said earlier, but digital humanities is particularly at risk because it lacks a strong sense of itself. I also noted that its necessary openness to relationships is another source of vulnerability. To become interdisciplinary means to become radically reciprocal.

Second, digital humanities has (to paraphrase the medieval *centrum ubique, circumferentia nusquam*) a centre all over the disciplinary map and a circumference that is at best uncertain. Here is not the place to argue how far the Big Tent extends, nor what activities, if any, or in what sense, belong under it and nowhere else (Pannapacker 2011). But it is clear that interdisciplinary research is simply how it operates. That fact makes becoming interdisciplinary neither easy nor simple, however. It is not easy for reasons I have taken pains in this chapter to explore. Digital humanities does not get a pass. It is not simple because the techno-scientific instrument on which the practice is based means that the digital interdisciplinarian brings the whole inheritance of the Two Cultures to the table. But like it or not, the techno-sciences are part of the conversation.

Third, in consequence of that inheritance, digital humanities offers a middle ground or conjectural space within which, data being simply data, the objects of study dear to the humanities may be treated temporarily *as if* they were objects of nature, like rocks or stars, then the results of that treatment juxtaposed to how we see them and questions asked. I have argued the case at length elsewhere (McCarty 2007). But the core of it is this: that via the conjectural space digital humanities inherits without surrender of authority to the sciences far more than the debate C. P. Snow started in 1959. It inherits many centuries of now relevant work that has been foreign to the humanities since Galileo.

8. Coda

My aim here has been to suggest that not just the need to tackle great problems but also curiosity's latest historical moment are with us, that becoming interdisciplinary both rides the urge to know and struggles to hang on against the possibility of being thrown by it. I have put great emphasis on faithfulness to a discipline's self-understanding as countermeasure to solipsism, but at the same time the well-attested history of fruitful poaching cannot be denied.

Is becoming interdisciplinary – always that participle, Denning insisted – a good thing? Anyone struggling to finish a major piece of writing against the

commanding temptations on all sides is allowed to wonder. But the cornucopia opened to us by curiosity's digital machine is not a force of nature like the tide. It is a direct consequence of human action, bringing back a dark, riddling answer to an implicit question: what if curiosity were operationalized? We have no clear answer yet but feel the force of the question.

Biographical note. Willard McCarty, FRAI, is Professor of Humanities Computing, Department of Digital Humanities, King's College London, and Professor (fractional), Digital Humanities Research Group, University of Western Sydney. The working title of his current book project is *Machines of Demanding Grace*, an historical study of digital humanities in its origins and early struggles, 1949-1991, in the context of the human. See www.mccarty.org.uk for more.

References

- Apter, David E. 2007. "On Clifford Geertz". *Daedalus* 136-3, 111-13.
- Austin, Timothy R., Alan Rauch, Herbert Blau, George Yudice, Sara Van den Berg, Lilian S. Robinson, Jacqueline Henkel, Timothy Murray, Mark Schoenfield, Valerie Traub and Marianna de Marco Torgovnick. 1996. "Defining Interdisciplinarity". *PMLA* 111.2: 271-82.
- Baird, Davis. 2004. *Thing Knowledge: A Philosophy of Scientific Instruments*. Berkeley: University of California Press.
- Barzun, Jacques. 1974. *Clio and the Doctors: Psycho-history, Quanto-history and History*. Chicago II: University of Chicago Press.
- Beer, Gillian. 1996. *Open Fields: Science in Cultural Encounter*. Oxford: Oxford University Press.
- Beer, Gillian. 2006. "The Challenges of Interdisciplinarity". Speech for the Annual Research Dinner, Durham University, 26 April 2006.
www.dur.ac.uk/ias/news/annual_research_dinner/ (11 February 2014).
- Benedict, Barbara M. 2001. *Curiosity: A Cultural History of Early Modern Inquiry*. Chicago: University of Chicago Press.
- Bentham, Jeremy. 1995. *The Panopticon Writings*. Ed. Miran Božovič. London: Verso.
- Berger, Peter. 1963. *Invitation to Sociology: A Humanistic Perspective*. Garden City NY: Doubleday.
- Berger, Peter. 1992. "Sociology: A Disinvitation?" *Society* 30.1: 12-18.
- Bridenbaugh, Carl. 1963. "The Great Mutation". *The American Historical Review* 68.2: 315-31.
- Burke, Edmund. 1757. *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful*. London: R. and J. Dodsley.
- Bush, Vannevar. 1945. "As We May Think". *The Atlantic Monthly* 176.1: 101-8.
- Cioran, Emile M. 1973. *De l'inconvénient d'être né*. Paris: Gallimard.
- Crabtree, Andrew, Mark Rouncefield and Peter Tolmie. 2012. *Doing Design Ethnography*. Heidelberg: Springer Verlag.
- Darwin, Charles. 1871. *The Descent of Man and Selection in Relation to Sex*. 2 vols. New York: D. Appleton and Company.
- Daston, Lorraine. 2005. "All Curls and Pearls". Rev. of *The Uses of Curiosity in Early Modern France and Germany*, by Neil Kenny. *London Review of Books* 27.12 (23 June): 37-8.
- Daston, Lorraine, ed. 2004. *Things that Talk: Object Lessons from Art and Science*. New York: Zone Books.
- Daston, Lorraine and Katharine Park. 1998. *Wonders and the Order of Nature 1150-1750*. New York: Zone Books.
- Davis, Lance E., Jonathan R. T. Hughes and Stanley Reiter. 1960. "Aspects of Quantitative Research in Economic History". *The Journal of Economic History* 20.4: 539-47.
- Dening, Greg. 1995. *The Death of William Gooch: A History's Anthropology*. Honolulu, Hawai'i: University of Hawai'i Press.
- Dening, Greg. 1996. "A Poetic for Histories". In *Performances*. 36-63. Chicago: University of Chicago Press.
- Dening, Greg. 2002. "Performing on the Beaches of the Mind". *History and Theory* 41: 1-24.
- Dillon, Brian and Marina Warner. 2013. *Curiosity: Art and the Pleasures of Knowing*. London: Hayward Publishing.
- Douglas, Mary. 1987/1986. *How Institutions Think*. London: Routledge & Kegan Paul.
- Eagleton, Terry. 1998/1989. "Resources for a Journey of Hope: Raymond Williams". In *The Eagleton Reader*. Ed. Stephen Regan. 311-20. Oxford: Blackwell.

- Fischer, David Hackett. 1970. *Historians' Fallacies: Toward a Logic of Historical Thought*. New York: Harper & Row.
- Fish, Stanley. 1989. "Being Interdisciplinary Is So Very Hard To Do". *Profession* 89. 15-22. New York: Modern Language Association.
- Foucault, Michel. 1996/1980. "The Masked Philosopher". In *Foucault Live: Collected Interviews, 1961-1984*. Ed. Sylvère Lotringer. Trans. Lysa Hochroth and John Johnston. New York: Semiotext(e).
- Foucault, Michel. 1991/1975. *Discipline and Punish: The Birth of the Prison*. Trans. Alan Sheridan. New York: Vintage Books.
- Franck, Robert. 2002. "General Introduction". In *The Explanatory Power of Models*. Ed. Robert Franck. 1-8. Dordrecht: Kluwer Academic Publishers.
- Frank, Roberta. 1988. "'Interdisciplinary': The First Half Century". *Issues in Integrative Studies* 6: 139-51.
- Frodeman, Robert, Klein, Julie Thompson, and Carl Mitcham, eds. 2010. *The Oxford Handbook of Interdisciplinarity*. Oxford: Oxford University Press.
- Frye, Northrop. 1988. *On Education*. Markham ON: Fitzhenry & Whiteside.
- Fuller, Steve. 2013. "Deviant interdisciplinarity as philosophical practice: prolegomena to deep intellectual history". *Synthese* 190.11:1899-1916.
- Galison, Peter. 1997. *Image and Logic: A Material Culture of Microphysics*. Chicago : University of Chicago Press .
- Galison, Peter. 2013. "Trading with the Enemy". In Gorman 2010, 25-42.
- Geertz, Clifford. 1972. "Deep Play: Notes on the Balinese Cockfight". *Daedalus* 101.1: 1-37.
- Geertz, Clifford. 1980. "Blurred Genres: The Refiguration of Social Thought". *The American Scholar* 49.2: 165-79.
- Geertz, Clifford. 1983. "'From the Native's Point of View': On the Nature of Anthropological Understanding". *Local Knowledge: Further Essays in Interpretative Anthropology*. 3rd edn. New York: Basic Books.
- Geertz, Clifford. 1995. *After the Fact: Two Countries, Four Decades, One Anthropologist*. Cambridge MA: Harvard University Press.
- Glimm, James. 1990. "Scientific Computing: Von Neumann's Vision, Today's Realities, and the Promise of the Future". In *The Legacy of John von Neumann*. Ed. James Glimm, John Impagliazzo and Isadore Singer. Proceedings of Symposia in Pure Mathematics, vol. 50. 185-96. Providence RI: American Mathematical Society.
- Gorman, Michael E. 2010. *Trading Zones and Interactional Expertise: Creating New Kinds of Collaboration*. Cambridge MA: MIT Press.
- Gramelsberger, Gabriele, ed. 2011. *From Science to Computational Sciences: Studies in the History of Computing and its Influence on Today's Sciences*. Zürich: Diaphanes.
- Hacking, Ian. 1990. *The Taming of Chance*. Cambridge: Cambridge University Press.
- Hacking, Ian. 2002. "'Style' for Historians and Philosophers". *Historical Ontology*. 178-99. Cambridge MA: Harvard University Press.
- Hacking, Ian. 2004. "The Complacent Disciplinarian". *Interdisciplines: Rethinking Interdisciplinarity*, 5 January. apps.lis.illinois.edu/wiki/download/attachments/2656520/Hacking.complacent.pdf (11/2/14)
- Halbwachs, Maurice. 1992. *On Collective Memory*. Ed. and trans. Lewis A. Coser. Chicago: University of Chicago Press.
- Hanley, Lindsey. 2009. "Introduction". In *The Uses of Literacy: Aspects of Working Class Life*, by Richard Hoggart. ix-xxiv. London: Penguin.
- Heinlein, Robert A. 1961. *Stranger in a Strange Land*. New York: Ace Books.
- Humphreys, Paul. 2004. *Extending Ourselves: Computational Science, Empiricism, and Scientific Method*. Oxford: Oxford University Press.

- Kenny, Neil. 2004. *The Uses of Curiosity in Early Modern France and Germany*. Oxford: Oxford University Press.
- Klein, Julie Thompson. 1990. *Interdisciplinarity: History, Theory, & Practice*. Detroit: Wayne State University Press.
- Knorr Cetina, Karin. 1991. "Epistemic Cultures: Forms of Reason in Science". *History of Political Economy* 23.1: 105-22.
- Kuhn, Thomas. 1977. "The relations between the history and philosophy of science". In *The Essential Tension: Selected Studies in Scientific Tradition and Change*. 3-20. Chicago: University of Chicago Press.
- Liu, Alan. 2008. "The Interdisciplinary War Machine". *Local Transcendence: Essays on Postmodern Historicism and Database*. 169-85. Chicago: University of Chicago Press.
- Lloyd, G. E. R. 2002. *The Ambitions of Curiosity: Understanding the World in Ancient Greece and China*. Cambridge: Cambridge University Press.
- Lorenz, Konrad. 1981/1974. *The Foundations of Ethology*. Trans. Konrad Z. Lorenz and Robert Warren Kickert. New York: Springer Verlag.
- Lounsbury, Michael and Marc J. Ventresca. (2002). Social Structure and Organizations Revisited. *Research in the Sociology of Organizations* 19: 3-36.
- Lyon, David, ed. 2006. *Theorizing Surveillance: The Panopticon and Beyond*. Cullompton, Devon: Willan Publishing.
- McCarty, Willard. 2005. *Humanities Computing*. Basingstoke: Palgrave.
- McCarty, Willard. 2013/2006. "Tree, Turf, Centre, Archipelago – or Wild Acre? Metaphors and Stories for Humanities Computing". In *Defining Digital Humanities: A Reader*. Ed. Melissa Terras, Julianne Nyhan and Edward Vanhoutte. London: Ashgate.
- McCarty, Willard. 2013. "The Future of Digital Humanities Is a Matter of Words". In *A Companion to New Media Dynamics*. Ed. John Hartley, Jean Burgess, and Axel Bruns. Chichester: Wiley-Blackwell.
- McCarty, Willard. 2007. "Being Reborn: The Humanities, Computing and Styles of Scientific Reasoning". *New Technology in Medieval and Renaissance Studies* 1:1-23.
- Michaelis, Anthony R. 2001. *The Scientific Temper: An Anthology of Stories and Matters of Science*. Heidelberg: Universitätsverlag C. Winter.
- Nardi, B. A. (2010). *My Life as a Night Elf Priest*. Ann Arbor: University of Michigan Press.
- Newell, William H., ed. 1990. *Interdisciplinarity: Essays from the Literature*. New York: College Entrance Examination Board.
- Nyce, James M. and Paul Kahn. 1991. *From Memex to Hypertext: Vannevar Bush and the Mind's Machine*. Boston: Academic Press.
- Pannapacker, William. 2011. "'Big Tent Digital Humanities', A View from the Edge, Part I". *The Chronicle of Higher Education*, 31 July. chronicle.com/article/Big-Tent-Digital-Humanities/128434/ (5/3/14).
- Perry, J. W., M. M. Berry, F. U. Luehrs, Jr. and Allen Kent. 1954. "Automation of Information Retrieval". AIEE-IRE '54 (Eastern): Proceedings of the December 8-10, 1954, Eastern Joint Computer Conference: Design and Application of Small Digital Computers. New York: Association for Computing Machinery.
- Plumb, J. H. 1973. "Is History Sick? Manipulating the Past". *Encounter* 40: 63-7.
- Rheinberger, Hans-Jörg. 2010. *On Historicizing Epistemology: An Essay*. Trans. David Fernbach. Stanford: Stanford University Press.
- Ridenour, Louis N. 1955. "Storage and Retrieval of Information". AIEE-IRE '55 (Eastern): Papers and Discussions Presented at the November 7-9, 1955, Eastern Joint Computer Conference: Computers in Business and Industrial Systems. New York: Association for Computing Machinery.
- Rorty, Richard. 1979. *Philosophy and the Mirror of Nature*. Princeton: Princeton University Press.

- Rorty, Richard. 2004/2002. "Being That Can Be Understood is Language". In *Gadamer's Repercussions: Reconsidering Philosophical Hermeneutics*. Ed. Bruce Krajewski. 21-29. Berkeley: University of California Press.
- Stinchcombe, A. L. (1965). Social Structure and Organizations. In *Handbook of Organizations*, ed J. G. March. 142-93. Chicago IL: Rand McNally & Company.
- Stone, Lawrence. 1987. "Resisting the New". Rev. of *The New History and the Old*, by Gertrude Himmelfarb. *New York Review of Books* 34.20.
- Strathern, Marilyn. 2004. *Commons and Borderlands: Working Papers on Interdisciplinarity, Accountability and the Flow of Knowledge*. Oxford: Sean Kingston Publishing.
- Strober, Myra. 2010. *Interdisciplinary Conversations: Challenging Habits of Thought*. Stanford: Stanford University Press.
- Tillyard, E. M. W. 1958. *The Muse Unchained: An intimate account of the revolution in English studies at Cambridge*. London: Bowes and Bowes.
- Tinbergen, Niko. 1969/1958. *Curious Naturalists*. Garden City NY: Doubleday & Company.
- Williams, Raymond. 2001/1958. "Culture is Ordinary". In *The Raymond Williams Reader*. Ed. John Higgins. 10-24. Oxford: Blackwell.

ⁱ “Ce qui rend les mauvais poètes plus mauvais encore, c'est qu'ils ne lisent que des poètes (comme les mauvais philosophes ne lisent que des philosophes), alors qu'ils tireraient un plus grand profit d'un livre de botanique ou de géologie. On ne s'enrichit qu'en fréquentant des disciplines étrangères à la sienne.”

ⁱⁱ *Metaphysics* 980a21.

ⁱⁱⁱ *The Descent of Man* (1871, 47), where he dismisses the opinions of “many authors who have insisted that man is separated through his mental faculties by an impassable barrier from all the lower animals”. Other keen observers of the natural world attest to what Konrad Lorenz calls the autonomous exploratory behaviour of “the most highly organized animals... [which] can, in subjective phenomenology, be described as curiosity” (1981/1978, 292; see also 333-5), e.g. fellow Nobel laureate Nikolaas Tinbergen’s *Curious Naturalists* (1969/1958).

^{iv} “to understand so thoroughly that the observer becomes a part of the observed—to merge, blend, intermarry, lose identity in group experience....” (Heinlein 1961, 287). See all of *OED* s.v. *know*.

^v See *Conf.* 10.35; but note also 1.14; *Summa* Q167; cf. Foucault 1996/1980, 305.

^{vi} Not everyone who uses the abstract noun engages in the ontological exercise; my point is that the abstraction raises the question, what is *it*?

^{vii} Now the Association for Interdisciplinary Studies; see <http://www.units.muohio.edu/aisorg/> (27/1/14).

^{viii} Frodeman, Klein and Mitcham 2010. Locating and sorting those signs I leave as an exercise in interdisciplinary research for the reader. But note esp. Fuller 2013.

^{ix} Daston and Park 1998, 9-10. Social history demonstrates that extra-academic curiosity about matters formerly kept hidden or dismissed erupted in popular culture from the mid 1960s; the Swedish films *I am Curious (Yellow)* and *I am Curious (Blue)*, released in 1967 and 1968 respectively, are representative.

^x Academic attention to curiosity blurs into the anthropology and social history of magic, shamanism, witchcraft, demonology, satanism, the paranormal and so on, which show a much less well defined trajectory.

^{xi} <http://cabinetmagazine.org/information/index.php> (8/1/14).

^{xii} For the exhibition see <http://www.southbankcentre.co.uk/find/hayward-gallery-and-visual-arts/hayward-touring/future/curiosity-art-and-the-pleasures-of-knowing> (8/1/14).

^{xiii} For the Blankensee-Colloquia (another good example of recent interest in interdisciplinary research) see <http://www.wiko-berlin.de/en/institute/projects-cooperations/blankensee-colloquia/>; for the 2007 event, <http://userpage.fu-berlin.de/~gab/info/blankensee-colloquium2007.html>.

^{xiv} Gramelsberger 2011, 12 (proceedings of the 2007 Colloquium), paraphrasing Thomas Lippert; see also Humphreys 2004.

^{xv} See, for example, the first two papers discussing “information retrieval” in the ACM Digital Library, Perry et al 1954 and Ridenour 1955.

^{xvi} The case does not have to be made for the humanities; for the sciences see Rheinberger 2010.

^{xvii} Bush 1945: 101; see also Nyce and Kahn 1991

^{xviii} See Bentham 1997; Lyon 2006; Foucault 1991/1975.

^{xix} Liu 2008 is the only other argument along these lines that I know.

^{xx} Apart from Frodeman, Klein and Mitcham 2010, see esp. Fuller 2013 and the many publications of Julie Thompson Klein, csid.unt.edu/about/people/klein/ (11 February 2014), e.g. Klein 1990.

^{xxi} For one of the more spectacular examples see the reaction of historians to the importation of computing (in the form of “quantification”) from economic history, e.g. Davis, Hughes and Reiter 1960: 540; Bridenbaugh 1962; Fischer 1970: 104; Plumb 1973: 64ff; Barzun 1974: 14, 158; Stone 1987.

^{xxii} According to David Apter, Clifford Geertz “once entertained the notion of doing an anthropological study of the disciplines as savage tribes” (2007: 112). Alas, he did not act on it.

^{xxiii} Ethnography is standard practice in computer science; see e.g. Crabtree, Rouncefield and Tolmie 2012; Nardi 2010.

^{xxiv} For the sciences in general see Hacking on styles of scientific reasoning (2002). Examples of pattern-finding tests in statistics are numerous and telling; see Hacking 1990. See also McCarty 2005: 68-9 on the remarkably migratory Michaelis-Menten equation. Digital humanities is based on the migratory power of methods across disciplines.

^{xxv} For the effects of statistics on the social sciences see Franck 2002; see also note ^{xxi}.

^{xxvi} Baird 2004 and Daston 2004; see also Gorman 2010 and Galison 1997.

^{xxvii} <http://www.ianhacking.com/education.html> (8/2/14).

^{xxviii} For the Reith Lectures see <http://www.bbc.co.uk/radio4/features/the-reith-lectures/about/>; for the Haskins Lectures <http://www.acls.org/pubs/haskins/>.

^{xxix} Stinchcombe 1965; Lounsbury and Ventresca 2002.

^{xxx} Halbwachs in Lewis A. Coser’s introduction, Halbwachs 1992: 22; Douglas 1986/1987: 45.