Tree, turf, centre, archipelago – or wild acre? Metaphors and stories for humanities computing[1]

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Abstract. The social acceptability of computing to the humanities is no longer a serious problem, although its role in research is sometimes overlooked or must be kept decorously out of sight. The real problem is that in an academic world largely defined by disciplinarity turf-polity, possibilities for it are severely constricted. As was true in the early days of computer science, humanities computing is still likely to be seen, judged and funded not as an integral practice but piecemeal, in the widely differing terms of the disciplines to which it is applied. In this essay I go after antiquated figures of thought responsible for this blinkered, piecemeal view. Reasoning from the evident importance of geopolitical metaphors to our operative conception of disciplinarity, I look down under, and back in time, for different, less constricting metaphors and draw out of them a different professional myth to live by.

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[1] This essay was originally delivered as a plenary address at "Computing Arts 2004", Centre for Literary and Linguistic Computing, University of Newcastle, NSW Australia, www.newcastle.edu.au/centre/cllc/ca2004/. My thanks to the organizer, Professor Hugh Craig, for his many kindnesses and patience, to the anonymous reviewers who stimulated me to improve the first attempt and to John Burrows for advice on the connotations of words. All URLs have been verified as of 29/7/05.

> Through gentle digging one can uncover the old latent configurations, but when it comes to determining the system of discourse on the basis of which we still live, as soon as we are obliged to question the words that still resonate in our ears, that are mingled with those we are trying to speak, then archaeology… is forced to work with hammer blows.
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> Michel Foucault, "On the Ways of Writing History" (1998, p. 293)

> The imposing edifice of society above my head holds no delights for me. It is the foundation of the edifice that interests me. There I am content to labor, crowbar in hand, shoulder to shoulder with intellectuals, idealists, and class-conscious workingmen, getting a solid pry now and again and setting the whole edifice rocking. Some day, when we get a few more hands and crowbars to work, we'll topple it over….
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> Jack London, "What Life Means to Me", in *Revolution and Other Essays* (1909)

We commonly take fear to be a sign of ignorance, and so doctor it with knowledge. Thus Clifford Geertz begins his attack on anti-relativism by noting that, "A scholar can hardly be better employed than in destroying a fear" (2000, p. 42). But this much can be said for fear: it is at least a response to something perceived, however imperfectly. Take, for example, the recent fear expressed in the U.S. *Chronicle of Higher Education* by the pseudonymous Ivan Tribble.[2] Of one job candidate who was discovered to have a blog, Professor Tribble writes that because "the true passion of said blogger's life was [revealed in it to be] not academe at all, but the minutiae of software systems, server hardware, and other tech exotica", he or she could not be trusted: "we can't afford to have our new hire ditching us to hang out in computer science after a few weeks on the job." In the short term, applicants may rightly be worried about professors Tribble, but the scenario this one imagines is so unlikely, we are apt to dismiss it as the ignorant imaginings of an old guard on its way out, and so counsel patience. Indeed, his reaction sounds the tiresomely familiar denial of academic seriousness to one field by another, in particular the dismissal of a hands-on practice by a discourse-centred discipline. The haughty brush-off of "rude mechanicals" by their presumptive social betters is with us still, it seems.

But there is more to Tribble than that. To paraphrase Bacon, the problem is not that senior colleagues, fearing change "as children fear to go in the dark",

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[2] 8 July 2005, chronicle.com/jobs/2005/07/2005070801c.htm.

are unable to cope. Rather what is worth our attention here is the social institution that they are leaving behind for their young-turk successors. From the perspective of computing for the humanities, this institution embodies a problematic way of thinking about knowledge not directly related to the social acceptability of technical work. A confirming sign of something deeper at fault is the digirati's own frustration at a mismatch between emergent possibilities of computing and existing disciplinary structures. (Consider, for example, how computing is currently fitted into academic positions in the humanities, or how the possibilities for research are defined by panels of assessment.[3]) Given this mismatch, Tribble's fear of desertion seems far less irrational, even soberly pragmatic. Who, loving challenges and excited by the possibilities of computing, would not be tempted by escape from a hide-bound, intellectually exhausted department in the humanities to pursue them?[4] Computer science, which together with molecular biology is "the fastest growing sector of academia" (Mahoney 2002, p. 27), is hungry for worthy problems and is an increasingly broad church.[5] The field variously known as "information studies" or "library and information science" is not far behind, in fact may offer a better home.[6]

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[3] For a typical example of a job advertisement, see *Humanist* 19.151, lists.village.virginia.edu/lists_archive/Humanist/v19/0150.html. For online databases of jobs, see those listed by Academic360, www.academic360.com/; note the semiotics of their structures and search facilities. For funding and assessment structures, see the following schemes: (1) the "Units of Assessment" for the U.K. Research Assessment Exercise (*RAE 03* 2005, pp. 35-6), www.rae.ac.uk/pubs/2005/03/; (2) "Research Subject Coverage" of the U.K. Arts and Humanities Research Council; (3) the "Research Fields, Courses and Disciplines Classification" for the Australian Research Council, www.arc.gov.au/htm/RFCD_codes.htm; (4) the "Standard Research Grants Selection Committees" of the Social Sciences and Humanities Research Council of Canada, www.sshrc.ca/web/about/committees/standard_research_e.asp. Saul Fisher, Director of Fellowship Programs of the American Council of Learned Societies, notes that the approach of the ACLS for funding purposes is to view "humanities computing as divisible into the traditional humanistic disciplines". This view is traditional in that it defines the disciplines according to their subject matter, and pragmatic in that it reflects the organizational *status quo.* Its "central commitment [is] to humanistic scholarship so defined (as against computing or any of the other natural or formal sciences)." The principle at play is to "identify the specifically humanistic disciplines in terms of what humanistic domain they study, not what method (humanistic or otherwise) they employ" (private e-mail, by permission, 7/8/05).

[4] For a statement of the problem, see McGann (2005).

[5] For a measure of the expansion of interest within computer science for the humanities, compare *Computing the Future* (1994) with Mitchell, Inouye and Blumenthal (2003).

[6] John M. Unsworth (Graduate School of Library and Information Science, Illinois at Urbana-Champaigne) points to common ground "in scholarly communication, in knowledge representation, in access to information, in preservation of the cultural record, and in the organization and analysis of information" (private e-mail, 23/7/05).

Frustration, like fear, is not always merely a sign of an unenlightened or disturbed mind. It can also indicate an unenlightened, disturbing institution.

In this essay I go after a cause of the darkness in an idea of institutionalized research which blinkers us to a fundamental consequence of computing for the humanities. I begin with George Lakoff's and Mark Johnson's argument for the foundational role of metaphor in how we conceive the world and act in it (1980). I suggest the shaping influence of metaphor on our structures of knowledge, then argue that the inherited imagery which pervades our disciplinary thinking seriously interferes with our ability to understand what scholarly computing demands of us institutionally. I look to imaginations shaped by a particular geography for a better metaphor, then by expanding that metaphor into a narrative, suggest the beginnings of what might be called a new professional myth. The myth I tell is only one possibility out of many. I make no particular claims for it other than a somewhat improved account of humanities computing's role in the academy. My purpose is much more to exemplify mythologizing.

To paraphrase Lakoff and Johnson, I use "myth" in this context to mean a story one lives by, and "myth-making" to denote the process of constructing a recognizable account of what one does. I take the role of such a myth to be not deterministic but analogous to the winds and currents with or against which a sailor navigates, allowing degrees of freedom, giving exercise to cunning intelligence but exerting strong influence on course and speed, and so giving shape to the known world. Similarly, with E. H. Gombrich I take metaphor not to have an allegorical meaning but rather "qualities that lend themselves to symbolic use" (1971: 13). Metaphors as a result accumulate a history of uses to which they have been put, a history that helps us to identify those qualities but does not necessarily adhere to them. As Gombrich notes, "the temptation to regard all symbols as codes" – as keys to a perennial philosophy, an historical or psychological programme or a hidden agenda – is strong. Questions to be asked are, What figures of thought best suit our purpose? What does each do for us? What is its symbolic trajectory?

At issue is how we come up with an empirically adequate story to tell. Here I will simply assert that having a story is essential, first to make best sense of one's professional life, then to be equipped to explain it to others. The reactions of the old guard tell us this in addition: that a compelling explanation is long overdue.

1. The constructive power of metaphor

Lakoff and Johnson argue that metaphor is not merely an extraordinary flowering of thought or product of mental exhuberance but the ground in which our thinking is rooted.[7] Our prejudices condition us to treat metaphor as ornament to plain speech, perhaps useful but ultimately inessential. Mostly we relegate it to flagrantly imaginative genres, such as poetry. When we dig down into ordinary language, we may notice what we call "dead" metaphors, but as the label suggests, we are apt to treat them merely as fossils left behind in forming the bedrock of plain speech – historically interesting but dead. What we tend to see *as* metaphor is thus the obvious, striking, remarkable. Lakoff and Johnson direct our attention back to the supposed fossils, which they show to be tacitly active in shaping our ideas and actions.

"How strange it is", Ian Hacking comments in remarks on disciplinarity, "that ancient meanings are continued below the level of conscious awareness" (2004). In this essay I do not stop to enquire why they continue, but simply invoke Lakoff and Johnson in order to question a set of metaphors we seem unwittingly to work by – or, more specifically, those in terms of which we are now (mistakenly, I argue) struggling to construct computing's relation to the humanities. My contention is that the tropes and imageries we unquestioningly accept from our immediate disciplinary ancestors are unfit for the purpose and so lead to confusion and misspent effort. To echo Geertz, a scholar can hardly be better employed than in putting such a situation to rights.

In particular I highlight the general tendency to read metaphors of disciplinarity as if they were essentially factual terms describing an unpleasant but unavoidable academic *Realpolitik* rather than the figures of thought by which it is created and maintained. This misreading becomes especially problematic when we attempt to accommodate a genuinely new epistemological practice, such as humanities computing. We encounter difficulties because, as I will argue, it does not fit the academy we erect on top of the old metaphorical infrastructure. Here I intend to direct Foucauldian hammer blows at this infrastructure by going after the first three metaphors listed in my title – "tree", "turf" and "centre" – which are foundational to it. I then develop the fourth metaphor, "archipelago", as basis for imagining a structure generous enough to accommodate the kind of practice humanities computing has shown itself to be. I conclude by undercutting any claim to

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[7] Lakoff and Johnson (1980). Their argument parallels Northrop Frye's for mythology, constructed with metaphor: "the traditional view of nature seems right to the extent that man does not live directly in nature like the animals – there are no noble savages of that kind – but within a cultural envelope that conditions his approach to nature" (1990, p. 247).

canonicity this metaphor may seem to have by suggesting yet another alternative.

I suspect that if asked in private, most practitioners would refer the work they do to a discipline like history, classics or English literature, to a cross-disciplinary speciality like textual editing or to a technical practice like digital library research. If asked to explain their participation in the multi-disciplinary congregations of humanities computing (for example the Digital Humanities conference[8]), they would explain it by saying that humanities computing is useful to what they do, so they share in this interest, then go back to editing texts, writing histories, designing metalanguages or whatever. I have no quarrel with this sharing of interests. Indeed, it is a source of much that is good about the field. But as an acting out of institutional possibilities, it is radically incomplete. It fails to take direct account of the potent commonalities and synergies that are among the most intellectually and socially beneficial effects of computing. It suggests – here we verge on the problem I intend to address – that these commonalities and synergies are largely invisible to practitioners because of the institutional structures they inhabit.

A slightly better move might seem to establish a new discipline. Even if the immediate practical difficulties could be overcome, however, this would still attenuate the benefits by fencing off our subject as the bailiwick of specialists. The behaviour of other disciplines suggests that the agenda of humanities computing would then move away from collegial service and from a wide sharing of interests to intra-professional concerns. The new discipline, as a discipline, would become immediately ethnocentric like the rest, concerned chiefly with itself, with luck and hard work making jobs for a few but with considerably less benefit to most of those who, gathering at the occasional conference or with a technical practitioner, now find themselves at home away from home.[9]

But if humanities computing is not to be a discipline like the rest, how do we configure it so that it can be seen to exist as a scholarly pursuit, so that it can survive? What metaphors do we use to imagine, build and communicate its institutional form?

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[8] This is the conference formerly known as ALLC/ACH or ACH/ALLC; see www.digitalhumanities.org/ under Community.

[9] Note that I am not arguing here for an end to disciplinarity, or for its comprehensive replacement by multi-, inter- or trans-disciplinarity, only that the conventional status does not suit humanities computing.

2. Conventional figures of thought

To answer that question, we need first to examine conventional tropes. As promised I look at three words common to disciplinary discourse, excavate the metaphorical tenor of each and test it against the realities of practice.

2.1 Tree

One of the commonest ways of describing a subject of enquiry is to call it a "branch" of learning. This is in many ways an appealingly dynamic, organic and suitable figure: branches grow and subdivide into smaller and smaller segments in complex interrelationship with their environment. They produce flowers and fruit. Indeed, idealized tree-like structures have for millennia proven useful in diagramming categorizations, interrelationships and their products, for example in the medieval metaphor of the "tree of knowledge" depicted in Ramón Lull's late 13C encyclopedic compendium, *Arbor Scientiae*.[10] The tree metaphor "is very deep in human culture", as Hacking points out (2004), though the use of tree-diagramming is comparatively recent – he suggests a Western Asian origin ca. AD 500.

Nevertheless, as an epistemological metaphor the tree leads us in the wrong direction. There are two problems with it. First, in the time-scale in which we perceive them, trees are more or less static: what you see is all and only what you get, magnificent though it may be. Second, as Peter Burke points out in *A Social History of Knowledge*, the metaphor naturalizes what we now regard as man-made divisions of learning (2000, pp. 86-7). Fundamental innovation, thus made implicitly unnatural, is ruled out, literally denatured. There is no place on the tree for an epistemological activity which both defines its own agenda and interrelates with all the other fields of enquiry. We need to look elsewhere.

Since my aim is story-telling, it is worth asking what kind of narrative can result from the *arbor scientiae*. The image itself suggests that the onlooker's job is to behold or contemplate; in the context of computing, the imperative would be to implement. But the contemporary story of knowledge representation (in which the tree represents not Lull's doctrinal truth but

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[10] See, for example, the Wikipedia entry for "Arbor scientiae", de.wikipedia.org/wiki/Arbor_scientiae. For obvious reasons the image is popular in the subdivision of AI known as Knowledge Representation (KR); see the dust-jacket of Sowa (2000) and pp. 4-5, and cf. "The Tree of Knowledge Technologies", www.topquadrant.com/tq_tree_of_knowledge.htm. The image illustrates many notions of what knowledge might be, as search of the Web will reveal. On KR and humanities computing, see McCarty (2005), pp. 30-1.

commonsense knowledge) suggests that for us this metaphor's story is centrally of the attempt to discover what modern trees of such knowledge (or, in the more dogmatic projects, *the* tree) might be like. In essence the story is of working toward a perfect mimesis of a totalizing vision such as we are presumed to have commonsensically. Even if the ambition is a good-enough mimesis, the vision remains as singular.

2.2 Turf and related figures

In less bureaucratic, more obviously political contexts, areas of learning are defined by the subject matter they command or possess. Here geopolitical metaphors are common, e.g. "turf", "domain" and the related "boundary", "wall", "fence" and the like. We speak or think in terms of private property and the means used to defend or acquire it.

"Turf" denotes "a sod of grass, with the roots and earth adhering", a medieval synecdoche for property, as in the 16C sense of "sod cut from the turf of an estate… as a token or symbol of possession" (*OED*). Hence "turf-warfare". "Domain" points back from the possessed to the possessor, originally referring to *proprietas, quod ad dominum spectat*, i.e. a lord's private property (*OED*). In recent years the phrase "knowledge domain" has become popular in computer science and related areas to denote a well-defined territory populated by experts from whom reliable ontologies can supposedly be extracted. Speaking of "boundaries" or "walls" similarly leads back to ownership, ruling authority and territorial politics, with defense and aggression on either side.

The chief problem for a new epistemological practice is not the claim to private property. There cannot be, after all, any such private property in ideas, so attempts to possess will always be weak. Rather the hard problem is with the implications of a finite, well mapped and cultivated world: it allows for no *terra incognita* – nothing to be discovered, only something to be possessed; its divisions are fixed, or changeable only at great cost; and clear distinction between what does and what does not belong requires anxious, intellect-sapping attention. For a conventional discipline, boundaries are problematic because, as William Wulf has said, they mark where our knowledge fails, and so where the real challenges lie (1995, p. 56). They are problematic for humanities computing because, as with the *arbor vitae*, they exclude it. If boundaries denote the law, then disciplinary boundaries define humanities computing as an outlaw – homeless, stateless, gypsy.

Could it be that these territorial metaphors originate in or are cognate with the European geopolitical scene, especially prior to the European Union?

Consider, for example, the German mathematician David Hilbert's robust introduction to a lecture delivered in Zürich, Switzerland, in 1917, as the great empires of Europe were coming to a violent end:

> Just as in the life of nations the individual nation can only thrive when all neighbouring nations are in good health; and just as the interest of states demands, not only that order prevail within every individual state, but also that the relationships of the states among them be in good order; so it is in the life of the sciences. In due recognition of this fact the most important bearers of mathematical thought have always evinced great interest in the laws and the structure of the neighbouring sciences; above all for the benefit of mathematics itself they have always cultivated the relations to the neighbouring sciences, especially to the great empires of physics and epistemology. (Ewald 1996, p. 1107)

Here is a vision of knowledge as fixed and totalizing as the medieval *arbor scientiae*: all domains of enquiry are known, *ordentlich* like the professoriate Hilbert so brilliantly exemplified; what remains are the investigations within them and the negotiations among them. Few would speak thus today, at least not openly, but as Hacking suggests, the continuation of old meanings below the level of conscious awareness should not be underestimated. For example, we continue to talk, in what are derivatively aggressive terms, of breaking down boundaries between fields of learning, but as long as we continue to talk in this way, we give new strength to the boundaries that must be there so that we may continue heroically to break them down.

Again allow me to ask, what kind of a professional myth is promised here for humanities computing? Surely the story cannot be optimal: of existing on the fringes of the established domains, fighting local battles with other peripheral newcomers (such as new media studies) and making alliances as opportunities arise.

2.3 Centre

My next metaphor, a *centre* of learning, is not so much wrong for the purpose as it is incomplete. It is acceptable as a way of describing the place to which scholars come for help or to gather for collaborative work: originally the library, recently also the (humanities) computing centre, now in addition the evolving fusion of both in the digital library. It is capable of great power in Northrop Frye's use of it to denote the potential of a discipline to become "a centre of all knowledge" by providing "a structure that can expand into other structures" (1988, p. 10). This is, one suspects, his secular rendition of that ancient formula for God, *centrum ubique, circumferentia nusquam*, "centre everywhere, circumference nowhere", which de-centres the idea of ultimately localized space by turning it inside out, and so discovering "a world in a grain

of sand".[11] Thus, also, the idea of a world-wide digital library turns the library (or its local manifestation, the computer screen) into a portal on the docuverse.

Hacking (who has "dabbled in, and sometimes contributed to, more fields of thought than most people can shake a stick at") portrays much the same conception of a scholarly life: "applying my discipline in different directions", guided by curiosity, hard work and respect for the learned skills and innate talents of others. "Who else to go to", he asks, "but someone who knows more than you do, or can do something better than you can? Not because you are inexpert in your domain, but because you need help from another one" (2004). This is, I suspect, as generous a conception of disciplinary life as one will find. But what do you do if you do not have a long-established domain, if the geopolitical metaphor does not suit?

As I have suggested, the metaphor of a centre, though powerful as the matrix for an individual scholarly life, cannot open out into the kind of story we need. It is little help in imagining how humanities computing (or any other field) might relate socio-intellectually, on a collegial basis, to the intellectual world in which it finds itself.

3. Metaphors of exploration

Earlier, quoting Gombrich, I referred to the qualities of metaphor "that lend themselves to symbolic use". Each of the rejected metaphors contributes some qualities we can use – the tree defines space for movement among its branches; mapped terrain lays out settled ways of life to be visited; the centre paradoxically everywhere transcends locality. To paraphrase Gombrich, making our figures of thought conscious liberates us not just from regarding them as encoded programmes but also from their programming. Frustration gives way to clues toward a more generous way of conceiving scholarship.

As an example of one such way, I offer the fourth term in my title, "archipelago", for its qualities and especially for the stories it evokes of exploration by sea. A specifically European focus to these stories helps because it captures the sense of transition from a finite, thoroughly settled and well-mapped metaphorical terrain (from which humanities computing needs escape) to an uncertainly distributed group of diverse cultural places with room in which to act out unimagined possibilities.

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[11] I quote first Alain de Lille (1128-1202) from Alverny (1965, p. 297), then William Blake's "Auguries of Innocence".

The word "archipelago" (It. *arci-* "chief, principal" + *pélago* "deep, pool", fr. Gk. *pélagos* "sea") was perhaps first used in its etymological sense in the later 13th Century to name the Adriatic, "principal sea" of Venice, but its chief association was with the Aegean, archetypal place of explorations since Odysseus entered the European imagination. By the early 16th Century explorers had reapplied "archipelago" to mean the many islands of that sea, or a group of islands in any sea (*OED* 2).

As metaphor the first virtue of "archipelago" is that it necessarily implies a constant if moving perspective on something observed from without, at a distance. It is a sea-going rather than a land-locked term. Its second virtue is that the objects in sight are separated and so separately accessible, each across an ambivalent, liminal margin of ebb and flow. Approach from the sea, to islands or anything like an island,[12] evokes the story of exploration, and with it the core anthropological event of encounter.

Numerous European voyages, from the High Middle Ages on, supply us with a considerable number of individuals motivated by a varying mixture of scholarship, curiosity, mercantilism, piracy and so forth. Marco Polo is an obvious example from the 13th Century; William Dampier, "pirate of exquisite mind" from the 17th; and from the 18th two of James Cook's crew, the naturalists Joseph Banks on the first voyage and Johann Georg Adam Forster on the second.[13] Throughout this period, as well as before and after it, Christian missionaries, such as the Jesuits, explored alongside them. Long before any of these, sea-going merchants and adventurers of the ancient world, such as the Phoenicians, plotted the explorer's life and built sea-going empires.

The scientific curiosity of explorers like Banks and Forster is obviously relevant to the story we need – more so, perhaps, than might seem. Scott Atran has argued, for example, that earlier discoveries such as theirs, bringing large amounts of new evidence to the attention of European naturalists in the Age of Exploration, so challenged received ways of classifying the living world that revolutionary methods had to be invented (1990). Hence the emergence of scientific *alongside* folk taxonomy – not so much replacing the latter as complementing it in realms of experience for which folk-knowledge is insufficient. We have seen the same happen in the physical sciences of the

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[12] The word "island" can apply to land partially surrounded by water or even approached from across water (*OED*).

[13] The quoted phrase is from the title of Preston and Preston (2004). I am indebted to Timothy Mason, Virginia Knight, Reto Speck, Patricia Galloway and others for some of these suggestions, *Humanist* 19.136, 140.

very small and the very large, while the more intuitive schemes for dealing with the world on a human scale remain as useful as ever. Just so: our ability to command far larger amounts of evidence from computers is having or promises to have a similar effect on disciplines across the humanities.[14] Even areas of philosophy are affected.[15] At the same time, the mercantile and religious purposes of early explorers serve us also, as analogues for the practitioner's exchange of intellectual goods and inculcation of best practices among heretofore rarely communicating disciplines.[16]

The academic disciplines are not, however, passive to computing or mere sites for its revolutionary effects. They are also sources of guidance in our attempts to figure out what we are doing. In particular, the explorer's story brings anthropology immediately into play, to identify the crucial elements of this story and give us a hand in reading them. Here we have a precedent in Peter Galison's study of intensively collaborative scientific research, in which he uses the anthropological metaphor of a "trading zone" to describe situations in which a highly specialized researcher in one discipline takes an established body of techniques from another, more or less as a black box, for his or her own purposes.[17] The trading zone metaphor has much to recommend it: at one stroke it recognizes academic disciplines as cultural entities, and thus invokes the anthropology of cross-cultural encounter; focuses on dialogic discovery; posits interchange rather than exploitation or conquest; and draws attention to the migration of artifacts from their contexts of origin to other, unrelated ones.[18]

Galison focuses on migrant knowledge-objects passed between collaborating specialists, mostly in a single laboratory. In the practice of humanities computing, such objects (chiefly formalized methods rather than developed applications) are likewise exchanged. The difference is that these objects are

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[14] The clearest example is the work of John Burrows and colleagues in computational stylistics – clear enough to make the case in principle for other disciplines, although the actual effects depend largely on the match between computing and the current agenda of each discipline. See the chapters by Craig and Burrows in Schreibman, Siemens and Unsworth (2004).

[15] See, for example, Hacking (2005).

[16] I am essentially describing here what elsewhere is called the "methodological commons" of humanities computing; see McCarty (2005, pp. 114-57) and esp. Figure 3.1.

[17] Galison (1997), chapter 9 esp., but also chapter 1 and sections 3.11, 6.7, 6.11, 8.1, 8.5, 8.7.

[18] Here I can only note in passing the importance of the migrant artifact to this audience of purveyors, students and makers of tools. As Galison says, cross-cultural migration involves "a partial peeling away, an (incomplete) *dis*encumberance of meaning" (1997, p. 436): while the artifact may enter a culture with no knowledge of its original intention and no theory, or a different theory, of its workings, the object continues to work and to be in particular ways. This raises the related questions first of the intentionality of objects independent of our ideas about them, and second how we read these objects.

developed collaboratively, then carried by the practitioner from project to project – in the metaphor, from island to island. Hence, for humanities computing, great emphasis falls on the practitioner's cross-cultural encounters – in the ethnohistorian Greg Dening's happy phrase, crossing "beaches of the mind" to become an anthropological participant observer in a foreign disciplinary culture (1998, pp. 85-145). Harold Short has sketched out the broad features of the typical encounter between scholar and practitioner, with particular attention to the development of the scholarly problem, and so indicated where close ethnographic attention is needed: on the change in how the object of investigation is understood, the practitioner's role in this change and especially on his or her practice as a form of research.[19]

Frye's *centrum ubique* metaphor is powerfully suggestive of where the last part of this question might go. Usually when specialists are compelled to reach beyond the limits of their disciplines, Lubomír Dolezel points out, they interpret what they find in terms of what they already know. Taking literary critics as his example, he notes the reductive sameness common to their supposed interdisciplinarity:

> While claiming to cultivate interdisciplinarity, they give philosophy, history, and even natural sciences a "literary" treatment; their complex and diverse problems are reduced to concepts current in contemporary literary writing, such as subject, discourse, narrative, metaphor, semantic indeterminacy, and ambiguity. The universal "literariness" of knowledge acquisition and representation is then hailed as an interdisciplinary confirmation of epistemological relativism and indeterminism, to which contemporary literati subscribe. (1998, p. 785)

The same might be said of procrustean *applications* of computing, imposed template-like on scholarly problems, as happens when totalizing ambition fastens onto a trendy technology (such as XML encoding). Frye has something very different in mind. Crucially he speaks of *expanding* one epistemic structure into another, not of acting like the proverbial man with the hammer, to whom everything seems a nail.[20]

To see what this expansion might mean for computing, we need to ask what we might take its epistemic structure to be, and how typically this structure is

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[19] McCarty (2005, pp. 121-9) transcribes the essence of an interview with Short on this subject.
[20] The proverb is widely circulated in a number of versions, some attributed to the entrepeneur and statesman Bernard Baruch (1870-1965); thus "Baruch's Observation". It is used by the motivational therapist Abraham Maslow (1908-1970), in Maslow (1966, pp. 15f). Abraham Kaplan calls it "the law of the instrument", points out its inevitability as a consequence of training and recommends "applications of the greatest possible range of techniques" (1964, pp. 28-9). My thanks to John Lavagnino for this reference.

adapted to the structures of target disciplines in the humanities. When, that is, we look at a particular research problem in terms of computing, when we see its domain as computable data, what are we looking *with*, and how does it organize and filter what is known by means of it? How is the problem affected? There are, I think, two answers. The first is indicated by the concluding sentence of Marvin Minsky's Turing Award lecture: "The computer scientist", he writes, "is the one who must study [how we learn], because he is the proprietor of the concept of procedure…." (1970, p. 214). With computing, that is, we look procedurally. The second answer I take from the opening sentence of David Kirsch's "When is Information Explicitly Represented?": "Computation is a process of making *ex*plicit, information that was *im*plicit" (1991, p. 340). With computing, that is, we see what can be explicitly represented.

But these answers are differently treated with the different kinds of computing. By its standard account, computer science is centred on automation itself, as a mathematically described, mechanically implemented abstraction. Its question is (to quote Peter Denning), "what can be automated?" (1985, p. 16). Furthermore, in the theoretical sense dominant in computer science, the focus of interest is on the abstract process (computation) rather than what we do with physical instantiations of it (computing). In that context Kirsch's "making *ex*plicit" is therefore a matter of how automated inferencing processes can do the work. In contrast, humanities computing uses the procedural view of cultural artifacts dialectically, against the scholar's mechanically unaided understanding of them. It uses the methodical to find the methodical, then asks what is omitted. Its focus is on computing, taken to be the totality of what a scholar does with a computer. Kirsch's "making *ex*plicit" (e.g. in an XML encoding or a relational database design) is thus the human process of rendering "information that was *im*plicit" computationally tractable. Employing particular formalized methods, that is, the computing humanist models a scholarly interpretation or purpose, but prior to them, is concerned with the gap between what can be methodized and what cannot.[21]

The practitioner's idea of knowledge gets its opportunity to expand when stock methods, such as just named, prove inadequate to a theoretical design, and recourse must be had back to the question of what is to be methodized. Consider, for example, a densely encoded digital edition of a complex text. A

[21] The problem of explicit representation is hard, Kirsch notes at the end of his article, "because we tend to think of explicitness as a local property of a data structure: something that can be ascertained without studying the system in which it is embedded" (1991, p. 363). In humanities computing this "system" is the computer-using scholar.

principal rationale for such work today is the possibility of realizing a de-centred theoretical structure that allows different conceptions of the text to be modelled (cf. McGann 2001, pp. 53-74). A dense encoding thwarts that ambition in the very process of attempting to realize it, however, by presenting a complexity of detail without the means to control and manipulate it in the time-frame that exploratory modelling demands. Many know well that it becomes simpler to start again with an unencoded text than to puzzle out the implemented conventions, then locate and modify the encoding as the new scheme requires. Relational database technology provides effective tools for controlling the detail, but at the same time it distances the scholar-maker from the word-by-word engagement that literary-critical practice typically demands. In brief, the partial failure of both technologies in attempting to methodize the theory of editions points forward to a new technology – that is, to an expanded structuring of knowledge.

Manfred Thaller has made the general point that in fact all our inherited stock-in-trade applications fail to some degree to match the demands of scholarly practice – hence that fundamental rethinking of formalized methods needs to be done (2001, 2004). This is not a once-off, rather an endless dialectical process of rethinking scholarly tools in interplay with cultural artifacts.

Hence, again, the mythological requirement of humanities computing to pull back from specific encounters so that the greater story which contains and gives identity to the practice may be seen. Hence, again, the usefulness of the anthropology evoked by my metaphor. In his essay, "Deep Play: Notes on the Balinese Cockfight", Clifford Geertz tells a parallel story. He describes a moment early in his career when he and his wife gained rapport with the village people they had gone to study: the moment when, watching a highly illegal cockfight with the villagers, they were interrupted by a police-raid and in an instant chose to flee with the natives rather than pull rank as Distinguished Visitors (1973, pp. 412-17). Geertz gives no explanation for crucial choice other than to call the group of watchers and the fighting cocks they watched "a superorganism in the literal sense". Perhaps already, as part of that superorganism, the two foreign observers had become also participants, the choice already in effect made. Sometime later they left, to bring to others elsewhere the story of it, and with that, wherewithal to expand into the cognitive structure of another culture.

4. Wild acre

The Australian context for which this essay was originally written gave me an opportune chance to attempt a public response to a question that had been

bothering me for some time: where to look for alternatives to the geopolitical structure of academic turf-polity in the European tradition, which as I have tried to show continues severely to constrict possibilities for humanities computing. David Hilbert's robust imperial metaphor, quoted above, first brought the relationship between geopolitics and scholarship to my attention. Almost simultaneously an alternative surfaced in the works of two Australians. First was Greg Dening's ethno-historiography, developed through studies of South Pacific explorations. Out of this work has come a generous conception of disciplinary poetics, whose aim (to paraphrase him) is to free our discourse on enquiry from any claim or presumption that by our expertise we are directed to seeing disciplines as having one form or another.[22] Then, through Ian Hacking's interest in the stylistics of reasoning, I encountered Alastair Crombie's comparative historical anthropology of scientific thinking in European culture, special for its focus "on how we find out, not on what we find out".[23] In the present context Crombie's work furnished an important example of the perspective gained by the outsider's view – in his case significantly reinforced, as Hacking remarks, "by the experiences of teaching in Japan, and of crossing parts of Asia and its oceans when visiting his native Australia".[24] So what if, I thought, we were to view the disciplines as an indeterminate, loosely connected group of cultural sites to be explored – and humanities computing as the explorer? Hence the archipelago metaphor, awakening memories of the formative period in European cultural history and so allowing indirectly, as Crombie says, "some appreciation of Europe from that more ancient viewpoint" (1994, p. xii).

But there is another, also ancient aspect to the Australian imagination that presents yet another alternative to help make my point that finding and trying out stories is where the effort at this stage must go. This second kind of imagination is what the novelist David Malouf, in his Boyer Lectures, calls "land-dreaming" – the Aboriginal component complementing the "sea-dreaming" imported by late-comer Europeans (1998). But the connection we need between this land-dreaming and inherited ideas of disciplinarity comes from Dening. In his curiously powerful meditations on a life in scholarship, he writes that "Where once we thought a discipline – history, say, or politics, or even economics – was at the centre of things by having a blinkered view of humanity, now we realize that we are all on the edge of things in a great ring of viewers" (1998, p. 139). Dening, as noted, is best known for his study of

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[22] See Dening (1996, pp. 35f) on writing history "concerned with the authenticity of experience rather than the credentials of the observer" and so productive of "the most generous way to describe a reflective discourse on all the hermeneutic dimensions of histories as cultural artifacts".

[23] Crombie (1994); Hacking (2002, p. 178).

[24] Hacking (2002, p. 198); cf. Crombie (1994, p. xii).

sea-dreamers, such as Captain Bligh of the Bounty (1992). But here, I take him to be speaking as a land-dreamer, looking from an encircling periphery, "on the edge of things", into a common but unpossessable and perilous *terra incognita*. This is a typical sense of the island-continent, Malouf assures us. It is found for example in his fellow novelist Tim Winton's meditations on costal life. "Australians", Winton writes sea-dreamingly, "are surrounded by ocean and ambushed from behind by desert – a war of mystery on two fronts" (1998, p. 36).

So, to the point: if we imagine scholarship with the help of Dening's metaphor – as encounters with a bounded but inexhaustible antipodean *centrum ubique* – where do we place humanities computing? What does this metaphor do for us?

By way of answering, we need some imaginative purchase on that antipodean centre. A very good means is provided by Malouf's short-story "Jacko's Reach", which shows us the transcendent quality of such a space, both geographically located (and so rich in detail and experience) and *everywhere*. Jacko's Reach is a wild acre amidst suburban normalcy, "the one area of disorder and difference in a town that prides itself in being typical: that is, just like everywhere else" (2000, p. 95). The Reach is different:

> … openly in communication, through the coming and going of native animals and of birds, or through seeds that can travel miles on a current of air, with the wilderness that by fits and starts, in patches here and great swathes of darkness there, still lies like a shadow over even the most settled land, a pocket of the dark unimaginable, that troubles the sleep of citizens by offering a point of re-entry to memories they have no more use for – to unruly and unsettling dreams.

When the story opens, the land is about "to be cleared and built on". Plans are for "a new shopping mall, with a skateboard ramp for young daredevils, two floodlit courts for night tennis and, on the river side, a Heritage Walk laid out with native hybrids." But, as he says,

> The possibility of building over [Jacko's Reach] was forestalled the moment it got inside us. As a code-word for something so intimate it can never be revealed, an area of experience, even if it is deeply forgotten, where we still move in groups together, and touch, and glow, and spring apart laughing at the electric spark. There has to be some place where that is possible.
>
> If there is only one wild acre somewhere we will make that the place. If they take it away we will preserve it in our head. If there is no such place we will invent it. That's the way we are. (pp. 99-100)

Indeed, *sub specie aeternitatis*, that is the way *we* are, or can be. And (to renew my question by querying an answer) if we are, and if we place ourselves as

scholars in a great ring around that space, where can humanities computing be but in it?

Sea-dreaming is astronomical and meteorological first of all; it is about navigation to and from. Its focus is the explorer – hence the preference given to it here. In contrast land-dreaming looks not up to the stars and to indicators of wind-direction, nor to instruments, maps or charts, but to the land, to the ground. Thus the ethnographic media artist Kim McKenzie, collaborator in a recent book on the Aboriginal Anbarra, "people of the rivermouth" in Arnhem Land, notes that "[m]ostly… they wrench the eye from the great flatness of the land to details such as the starred pattern of the seaweed *Jiwurl* or the iridescent flash of *Jorn*, the kingfisher" (Gurrmanamana et al. 2002, p. xii). Jacko's is hardly a great featureless flatness, rather a mere patch of scrubland within the normality of suburbia, but it reaches "for the wilderness further out that its four and a half acres have always belonged to and which no documents of survey or deeds of ownership or council ordinances have ever had the power to cancel" (p. 99). Like that great flatness, it is a place of small, accidental particularities – "a little Eiffel Tower off a charm bracelet, or your first cigarette lighter…. [or] something no one had warned you of", a man "hanging by his belt from a bloodwood" (p. 95). These irreconciliable things, being together in the Reach, tease the mind to attempt reconciliation but simultaneously guarantee its failure, and so point to "mystery as real as the rough bark of the tree itself". This mystery, as Malouf tells it, is the existential engine, "the way we are."

The archipelago, we saw, foregrounds cross-cultural encounter and exchange, hence gives the social side of computing practice a myth to live by and much learned commentary to inform it. As the interface to the wilderness that Dening's ringed scholarship delimits, Jacko's is contrastingly inward- rather than outward-looking. It emphasizes the stubborn particularity of what is somehow given, which we have the signifying impulse to rationalize. It serves the scholar's struggle to infer coherence from the data – to struggle along the continuum from implicit to explicit – and so, if honesty rules, the transcendence of these data. It supports if not implies a narrative of exploratory contemplation, for which Dening's disciplinary ring of viewers clears an enormous space.

I repeat my questioning answer: in this particular land-dreaming metaphorical frame, where can humanities computing be but in the Reach, as resident spirit of the place – as the place itself? I have suggested that we need to continue to ask, what is it, exactly, that the humanities computing practitioner does? My answer has been to tell a couple of stories, to invite the telling of many more.

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