

Individual matrix, communal workshop and “the living condition of the human mind”

Dr Willard McCarty
Reader in Humanities Computing
King’s College London
willard.mccarty@kcl.ac.uk

Abstract:

In this lecture I reflect critically on my bookish experiences as a scholar from the perspective of humanities computing. I ask, how does a digitally adept scholar tend to relate to libraries and what might be extrapolated from this relation? The Web increasingly seems to be undermining the relation between scholar and library. Hence many have begun to think of the library as an information retrieval system. Arguing strongly against such a model, I propose a reorientation centred on the epistemological question fundamental to a computing of as well as in the humanities: how do we know what we know?

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King’s College London

For Marilyn Deegan

Melius agricolae et fabri norunt quam ipsi tanti philosophi.
Peasants and artisans know nature better than so many
philosophers.

Ludovicus Vives (1492-1540), quoted by
Burke 2000: 13

1. Introduction

I approach the subject of this conference metaphorically in the same way I enter a library physically: through the front-door, as a user of its resources and maker of what passes (in some quarters) for knowledge. With no background whatsoever in librarianship, archival practice, information science or any of the other sub-fields of your subject, this is presumably why I have been brought half-way around the world to speak to you – so that you have at least one genuine user with whom to connect. But lacking the training and time to do the necessary sociological research, I can hardly claim to be representative of library-using colleagues, and my crooked disciplinary path to this juncture strongly suggests that I am not. So I am stuck with myself, or rather with my plural selves, first as a more or less conventionally trained scholar, then as one of those who wandered into computing from the humanities and proceeded to make a life for himself puzzling out what a computing *of* as well as *in* and *for* the humanities might be. The best I can do under these circumstances is to reflect critically on my bookish experiences from the shifting perspective of the field I have helped to create. Because the communities of practice represented at this conference approach scholarship as a dynamic activity rather than an accumulation of fixed achievements, I have some confidence that we speak mutually intelligible languages. By virtue of a preoccupation with how knowledge is made rather than with what is known, we can like Buddha in the famous parable see the whole elephant all at once, or at least see all of it in a particular way.¹ Hence we also share a responsibility to deal with the question of what is to be done so that the knowledge-making tools of computing best serve the disciplines of the humanities and nearby social sciences.

Among those of my academic kind, two metaphors are used to express the characteristic mentality. One, originating with my colleague Simon Tanner, is that of being *lapsed* (Deegan and Tanner 2002, p. xii). This was originally said of Christians who under persecution had denied their faith; now it is more often said of those who no longer adhere to a way of life to which they were once committed, for example, the academic discipline of their doctorate. The other metaphor, which is mine, is that of being *expatriate* from one’s country of birth, which is to say, *in* but never fully *of* the place where one lives, and progressively less *of* the place where one once lived. Thus, for example, my colleague Marilyn Deegan (a lapsed Anglo-Saxonist) and I (an expatriate Miltonist) were each originally trained in a conventional

academic field but now, to use another figure of speech, find ourselves shipboard explorers in a great archipelago of disciplines.

I shift metaphors deliberately. The combination of familiarity and detachment characteristic of the lapsed or expatriate mentality finds its most powerful expression in the anthropology of exploration, particularly in the figure of the participant observer, who crosses what Greg Dening has called “the beaches of the mind” to become, for a time, also someone other (1998, pp. 85-92). Like the social anthropologist or ethnographic historian, that is, people like me repeatedly enter into closed societies to which we are not native and participate sufficiently in their characteristic ways of being to effect mutually beneficial interchange.

This sort of interchange began for me about 20 years ago, across what was then essentially a help-desk. But the events that took place at that desk, or beach of the mind, so intrigued me with the questions about scholarship and computing which they implicitly raised that I followed where they led me, to what became more like the deck of a ship than yet another patch of academic turf. In plying the resultant trade, I and other practitioners discovered a common pidgin of methods sufficient to communicate across all the epistemic island-cultures of the humanities. Hence, reverting to a land-lubber’s vocabulary, what Harold Short and I have called “the methodological commons” (McCarty 2005, p. 119). To the methodologically un-self-aware humanities, this commons can even now seem a *terra incognita*, dubious if not dangerous. I will return to this point in my conclusion.

What I wish to do with the remainder of my time is to synthesise a perspective on libraries from the experiences of visiting and studying these metaphorical island-cultures of the humanities. My larger goal is to continue that 20-year project since the help-desk, to make out of our primitive methodological pidgin a robust professional creole.

2. Library as matrix

The word *matrix* in my title refers to the profound importance of the library to the intellectual formation of scholars. *Matrix* is Latin for “a mother in respect to propagation”; metonymically, the womb; metaphorically, a source, origin or cause (*Lewis & Short*). In English, by the late 16th Century, it comes to denote “A place or medium in which something is originated, produced, or developed; the environment in which a particular activity or process begins; a point of origin and growth” (*OED*). Since books were first put on shelves in some kind of order, in the 3rd millennium B.C., libraries have provided just such an environment for intellectual formation and growth. If I understand the history correctly, we may discern in their variety of forms a common genius, for encouraging an indefinite diversity of reading practices by separating singular, relatively unchanging resources from their manifold, highly changeable uses. This is what Lorcan Dempsey has happily called the “recombinant potential” of a library (2003). I cannot imagine critical, creative thinking of any kind, to any degree, without this potential.

According to Bernhard Fabian, the founding of the Göttingen University Library in 1787 established the modern ideal of the library both as universal reservoir of scholarship and as instrument for its work (1998/1983, p. 15). At least since then, every book that has entered the collection of a research library has realised its multiple indebtedness to all that has gone before by becoming a physical part of that collection. For works of scholarship as for literature, belonging to the library thus recognises incompleteness of the individual work. The library gives scholarship its proper humility as well as its proper home. Hence the library has

imprinted every scholar, in his or her individual ontogeny, not only with the paradigm of aggregated, flexibly structured learning, but also with the profoundly social, dialogic character of scholarship. Scholarship *is* learned dialogue, and that is strong argument against the pernicious caricature of the “lone scholar” and the equally damaging notions of the solitary genius and his or her definitive study.

Every scholar, that is, returns the benefits of nurture according to the great social principle of reciprocity – *do ut des*, “I give that you may give”. Hence the second attribute of my title, *communal workshop*. Fabian has argued that through the work they do in the library and the writings they contribute to it, scholars in turn serve “to nurture and to unlock the cultural traditions which meet and consolidate in the library...” (1998/1983, p. 3). The result is intellectual and cultural symbiosis.

3. Offline in the library or online at home?

The appeal of this symbiotic picture is immediate to scholars of my generation and before and to many who have been educated since. But the coming of networked resources has, as we all know, made a great change in habits of work. This coming must seem from one perspective less like Advent, more like the serpent’s entry into Paradise, offering strange knowledge at great cost. I can certainly find in my own experience over the last few years a growing conflict between a deep love of libraries and the immediate demands of my research, which are increasingly satisfied, often in wonderfully unexpected ways, by the Web. To put the matter starkly and selfishly, if these demands cannot be met online, I am in the library as well as for it. Otherwise, the Web being sufficient, I stay at home, for the library but not in it. Should this trend continue to grow, as would seem likely, we must wonder what will happen to ways of being whose traditional matrix is less and less formative.

Unlike its physical counterpart, the Web’s virtual door opens onto discontinuous glimpses of what we have considerable difficulty even conceptualising, much less navigating. This difficulty may be responsible for the strong impression that despite the metaphor its name invokes, we tend not to imagine the Web as a web but turn to imagery which does not imply a view of the whole or a symmetrical structure. Perhaps the best of the metaphors we do use conjures instead a warren of indefinitely, sometimes disorientatingly forking pathways, leading to strangely metamorphic objects. Those who speak in this way are likely to have in mind the marvellous stories of Jorge Luis Borges, such as “The Library of Babel” (1941) and “The Book of Sand” (1975), but the tradition of imagery Borges invokes is very old. It goes back to the mythological origins of enclosure, depicted in the labyrinth and instantiated in the urban forms of ancient Rome, Greece and Asia Minor.² Let me simply assert in passing that we imagine the Web in this way because this way of imagining is not only well-established but also holds considerable promise for our more adventurous work in the digital medium. It avoids the trap of imitation into which so many hopeful successors of the codex book have fallen.³

Like many scholars I choose to treat this Borgesian warren *as if it were* a library. It isn’t, in a strict, professional understanding of that term, but to me that is often irrelevant. The material I download from the Web mostly comprises scholarly articles, but – with Raymond Williams’ tolling refrain, “culture is ordinary” (2001/1958), in my mind’s ear – I also browse ephemera a library would never collect. As a teacher at the crossroads where the interstitial field of “material culture” meets computing,⁴ I know that this ephemera bears meaning of a deep and consequential sort. As a teacher in a little field too new to have many students, and as a

member of the beleaguered intelligentsia, whose Socratic task is to challenge a public that seems to want only sleep, I am impelled to reach out, into the popular culture that my students inhabit. Culture *is* ordinary. Research libraries (which I love) are not.

There is another fact of digital life which keeps me at the computer rather than primarily in one of the fine local libraries of which London can boast. As I said, we know that the Web is not a library of any kind, properly speaking: it has no intentional architecture, no classification system, no controlled vocabulary of metalinguistic terms (Deegan and Tanner 2002, pp. 25f). But thanks to Sergey Brin and Lawrence Page we have Google, which cleverly implements the very old idea that people show what they really think by what they do, not by what they profess.⁵ Given the very large amount of material now chaotically online, a googling scholar, adept with word-searching and savvy to basic online strategies, can find paths into the various disciplinary heartlands where, often surprisingly, an idea of interest is being actively pursued. Of course this may be done in a conventional library. I did it repeatedly during my doctoral research. But the number of potential paths has multiplied enormously in the digital world, thanks in part to such ephemera as class-handouts, course-descriptions, syllabi, informal bibliographies and the like. Would I, in those old days of the card catalogue, ever have run into articles on the biochemistry of enzyme kinetics and its use to model visual perception, which in turn I apply analogically to probe the workings of a particular literary-critical trope?⁶ Probably not.

As many here will know, Amazon.com and its affiliates have for some time put word-searchable image-files of many new books online. The search-engine a9.com, which uses Google, searches these as well as the Web, allowing one to identify (again, often surprisingly) relevant books and to a limited degree “look inside” them. I have on occasion found books in this way that I would otherwise never have encountered. The fact that these books may then be purchased literally at the click of a button greatly simplifies research for the scholar with sufficient money and shelf-space. Once again, no library visit.

The story I am telling gets worse (for physical libraries) once we take into account the large parts of the world where one must contend with libraries unable to buy books at all, perhaps unable to remain open for many hours a day. In Eastern Europe, for example, a classical philologist may simply not be able to consult standard reference works, some of which may approach or even exceed an average monthly salary.⁷ The countries in this region, eager to be European and now, as we speak, entering into conversation with the rest of the world as it is going digital, are far more likely to digitise than increase library budgets. So what happens? Scholars turn to crudely but effectively digitised versions of these reference works, which then are passed samizdat-style from hand to hand. Thus the standard encyclopedia of the ancient world, the Pauly-Wissowa *Realencyclopädie der klassischen Altertumswissenschaft*, in 83 volumes, costing thousands of pounds sterling, circulates as a series of searchable text-files on a DVD, and being a reference work, is actually much easier to use than in its ponderous printed form. Why, then, a scholar may be excused for asking, should I struggle to get to the library? Let it look to itself.

4. The institutional response

Faced by these understandably if regrettably self-interested tendencies, institutions may be excused for concluding that the “library without walls”, which our digital colleagues celebrate, directly threatens libraries with walls. (At least since Pliny the Elder, libraries have in a very important sense been without walls.⁸ Here I am speaking not of a supposedly

innovative design concept but of a potent image and its material consequences.) For these and other reasons, the only course may seem to be to throw the library's lot in with the digitisers', for example by inviting the local computing centre to help create something we might name an "Information Commons", drawing on the apparently natural analogy of the library to an information retrieval system. But this analogy is not natural – not innate to a social institution four to five millennia its senior. We have *naturalised* it and must beware of forgetting that fact.

The institutional marriage of library and retrieval system does seem a happy one.⁹ On the one hand, computing systems appear to be the librarians' natural ally for several reasons, not just as a superior cataloguing system but also as a means of overcoming inherited physical constraints and so extending the pool of users while reducing the demand on shelf-space and staff-time. Digitising also seems inevitable if we are to preserve otherwise decreasingly used material. On the other hand, the library is mightily attractive to the computing centre, which the steady decentralisation of computing has demoted to an almost invisible service. This marriage gives the computing centre direct purchase on a core activity of the institution. The nearby school of library and information studies, with long-standing interest in computer science, is bound to be glad as well. A vigorous and compelling research programme in digital library research springs up. Challenging problems of all sorts abound. Problem solved?

In a recent lecture, the philosopher Gordon Graham has noted three kinds of trouble brewing for this marriage, however (2005). These are: first, the implications of the semantically confused term "information"; second, the muddling together of library and archive; third, the problematic idea that knowing is a state of being rather than a kind of doing. The first and third of these troubles have long and complex histories, to which I can hardly do justice but will consider at some length. The second, about libraries and archives, lies squarely in your domain, so I leave it to you to judge whether, given the rest of what I have to say, information retrieval finds a happier union with archives than with libraries, as Gordon argues. To regard libraries as essentially archives is highly problematic, I would think.

4.1 The impression of information¹⁰

I said that "information" is a problematic notion. Two aspects of the history of the word demonstrate this.

The first is betrayed by our tendency to use this word, especially in technological contexts, to denote a transcendental virtue, as if mis-information and dis-information were not possibilities. For us this tendency gets considerable momentum from a mis-application of Claude Shannon's and Warren Weaver's technical usage in their work on signal theory in the late 1940s. Shannon and Weaver took great care, for example in their book, *The Mathematical Theory of Communication*, to warn the reader that "[t]he word information... is used in a special sense that must not be confused with its ordinary usage. In particular," they stressed, "information must not be confused with meaning" (1949, p. 8). In their research they were concerned with how a signal of any kind, bearing any sort of intention, is to be discriminated automatically from the noise inherent to its transmission. Thanks to them and to the good engineering which followed, we are now able blithely to assume under most circumstances that noise does not exist – hence that digitally transmitted information *is* transcendently good in the technical sense. Likewise we can overlook the sophisticated circuitry that creates the appearance of crisp digitality and thoughtlessly enjoy our robust

digital devices. This enjoyment may be based on a false belief, but we can get away with the error so long as we're not electrical engineers. The error we cannot afford to ignore, however, is the elision of Shannon's and Weaver's emphatic distinction between information and meaning. But many often ignore it, as a result of which the ancient, deeply conservative equation of "it is written" with "it is true" resurfaces in the commonly evident belief that, for example, a result from Google answers, without need for further inspection, whatever question prompted the query. This may sound like a gross exaggeration. If you think so, read a few undergraduate essays or listen to conversations around you.

Within certain fairly clear limits, publication of a book in print carries with it clear implication that a host of judgements and choices in how to deploy expensive human and material resources have taken place. Presence of the book on the library shelf implies many more. But an information retrieval system is entirely neutral as to the value of what it provides. Of course libraries select what is to be retrieved by their systems, but if we identify library with delivery mechanism, then we find it hard to talk about what is delivered, since those knowledge-objects have become, by fiat of a reductive metaphor, no longer the library's proper concern. Indeed, the vocabulary of *delivery*, speaking to the commodification of knowledge, actively works against the realisation of what it pretends to be delivering. Like employees of computing centres, the librarian is degraded by the assumptions built into this terminology.

The second source of trouble from the word "information" shares the same inheritance from Shannon's and Weaver's technical usage but has different effects. Once the distinction between information and meaning is lost, it becomes quite easy to think that like human identity in the ancient Pythagorean doctrine of *metempsychosis* ("transmigration of souls"), the essence of a cultural artifact may in theory if not in practice be digitised and so transmitted and replicated indefinitely. The current state of technology has not permitted such an argument to extend beyond linguistic text, but (as with so many things touched by computing) it is only a matter of time until inert physical objects are included.¹¹ Meanwhile many speak as if printed works could simply be entirely reduced to the alphabetic and related encoding of their text – as if the material circumstances in which we encounter them were irrelevant to their meaning. The linguist Geoffrey Nunberg, in "Farewell to the Information Age", argues that we can think this way in part because of the "information genres" of print, such as newspapers and telephone books, whose styleless style is crafted to give the materials of production and design every sign of irrelevance (1996). As a result, these genres apparently present (as the fictional American detective Joe Friday insisted of his witnesses) "just the facts, m'am, just the facts". It is from here a *very* short step to the utter divorcement of meaning even from the language of its expression – language, after all, is far too sensually corporeal. We are then left, without poetry, in the "plain, bare, monotonous vault" of Thomas Gradgrind's Victorian schoolroom: "NOW, what I want is, Facts", he declares at the beginning of Charles Dickens' *Hard Times*. "Teach these boys and girls nothing but Facts. Facts alone are wanted in life. Plant nothing else, and root out everything else. You can only form the minds of reasoning animals upon Facts: nothing else will ever be of any service to them."

4.2 Knowing vs knowledge

Some Victorians knew better, of course, and so do some of us. We know that facts are (to get back to the Latin root) *facta*, "that which has been made or done", by someone, for some purpose – that they have a history and are socially constructed.¹² True, in a stable world-order

the best of them tend to be or to become *very* durable. Witness social institutions, such as the library, still with us after 4-5,000 years. But even objects of nature no longer seem God-given since we began to look closely at the extent to which they are what we think they are by virtue of how we have conceptualised them. (Important recent work in the history and philosophy of science is thus probing the genesis and history of scientific objects.)¹³ But nowhere is the principle of radical constructivism of greater import to us than in Alan Turing's scheme for design of indefinitely many computings – the so-called Universal Turing Machine (McCarty 2005, pp. 169-73). That scheme not only is better than Legos and just as obviously centred on process rather than product. By Turing's own definition of what can in principle be computed, it also, *à la* Gradgrind, bans anything that cannot be rigorously defined. In consequence, perhaps surprisingly, close acquaintance with computing has tended to induce quite the opposite effect to that expected from an “information” revolution by those who suppose or assume knowledge to be, like Holy Writ to the fundamentalist, both completely expressible and essentially transcendent. Because it is neither, we are thrown back onto the stubborn reality of the material.

When, for example, an historically aware scholar sets about to design a digital edition, he or she will be drawn immediately to what I call its “material culture”, i.e. to the symbolic aspects of its physicality and social setting, and everything required to understand them. The dilemma is not only that no representation ever touches reality, nor even that computing is nowhere even close to a credible attempt. Rather it is that computing has simultaneously brought that material culture back into play (by raising the question of what to digitise) and changed the rules by which the game is to be played. Thanks to scholarly work in virtual reality,¹⁴ edging steadily closer to the holodeck of Starship Enterprise, we can now begin to imagine, for example, a setting in which an early 19th-century Gothic novel could be studied under something like the original conditions of reading, complete with the multiple dancing shadows cast on the opposite wall by flickering candles of animal fat, literally smelling of death.¹⁵ Among other things, this raises the question of how far we want to take the idea of a facsimile – all the way to a scholar's version of Disney World? But greater than Startrek, even if we allow for the voice-activated interactive programming of its VR environment, is the scholarly preference for turning from immersive participation to varying the parameters so as to discover what happens – or as Jerome McGann has said, quoting Lisa Samuels, so as to imagine what we don't know (2001, pp. 101-3).

Now reflect on the model of library as information retrieval system. Dickens knew better more than 150 years ago. Do we?

4.3. The constructed passivity of users

The second in Graham's list of problems for the marriage of libraries and information retrieval systems is the confusion of the library with the archive – a confusion I leave to you. The third of his problems is the passivity implied by the very old notion that knowledge, being a stable cognitive achievement, is in some way containable, as in a mind or by a codex book.

To put the matter briefly and crudely, containment of knowledge suggests that it is to the mind as water is to the pitcher that contains it. Now those who know their Dickens will realise that we are still in Gradgrind's schoolroom, with its imagery of children as “little vessels then and there arranged in order, ready to have imperial gallons of facts poured into them until they were full to the brim”. The underlying philosophical problem here has been

pursued for millennia, as Graham points out. But if thinking of knowledge as contained in the mind has solidly respectable ancestry, it is at best a fugitive on marshy ground when applied to books. Many millennia attest not just to the creation of *new* knowledge in interaction with books – Fabian’s characterisation of what scholars do in libraries, you will recall – but also to the creation of knowledge *in the act of reading them*. If we ask what books *do* contain, the best answer avoids the obvious negatives – not knowledge; strictly speaking, not even words or pictures. Rather it problematises the question. Containment is the wrong metaphor.

The problem for libraries that Graham spots isn’t the wrongheaded but persistent notion that content can be separated from form. Rather it follows from containment’s implication that readers are passive recipients of the packaged knowledge that they acquire. Two other common figures of speech reinforce this damaging implication: on the one hand, the reader as library *user*; on the other (to which I made reference earlier), the library as mechanism of *delivery*.

The word “user” seems in this context intended in its etymological and earliest sense, as a neutral term meaning “one who uses or employs anything” (*OED* 1a), but in the 20th Century, it has been found in unsavoury company, for example drug addicts (1b) and those who manipulate others for personal advantage (Add. 1d). In both cases passivity and victimhood are prominent. Even the obvious application of the term to computing must be qualified. Historically it is only really accurate in the interim period from the late 1950s to the late 1980s, during which batch-processing on machines in the specialised care of white-coated operators kept most academics at more than arm’s length. Since the appearance of the “microcomputer” in the 1980s, programmer and user have begun to coalesce into the figure I prefer to call the *end-maker*. This development still has a long way to go – those who would be end-making adults are being kept in the early adolescence if not infancy of their empowerment by the still rather primitive systems at their disposal. But the trajectory of computing seems almost certain to bring them to adulthood – if, that is, we push for it.

The word “delivery” is promising enough in its etymology – Latin *deliberare*, hence “set free, liberate, release, rescue, save” – but in one of those historical twists characteristic of language also came to mean “giving up possession of; surrender” (*OED* 3), and so “handing over, or conveying into the hands of another” (4a). The application of this sense to knowledge comes early, for example in Francis Bacon’s *Advancement of Learning*, where describing its diseases he speaks of “the manner of the tradition and delivery of knowledge, which is for the most part magistral and peremptory... in a sort as may be soonest believed, and not easiliest examined” (1605, I.V.9). I take him to be condemning “received knowledge”, i.e. that which is simply accepted rather than tried, tested and so actualised, “as [it stands] in a man’s own judgment proved more or less”. This deviant inclination to favour delivered knowledge has, it would seem, been considerably reinforced by the modern infrastructure of commerce. Hence the commodification of knowledge to which I referred, its measure as a kind of industry and an economic good, with analogies ready to hand in the packaged goods of the supermarket. Yet we nevertheless wonder at our students’ disinclination if not incapacity for critical thinking.

If readers are rendered by information retrieval systems into passive recipients, then librarians become the mere delivery boys-and-girls to scholarship, as I noted earlier. We can, I think, find the basis for a much more inviting trajectory.

5. The once and future library

This trajectory into the future begins by making sure that insofar as possible we see the past and present undistorted by the promoter's aggressive pitch and our own inclination to turn away from uncertainty to its false promise. Historian Michael Mahoney has observed that for computing "hype hides history" by casting over it the dark shadow of fictitious revolutions we are always about to experience but never seem to reach (2005). This, philosopher Jerry Fodor remarks, is "the idiom of grant proposals and of interviews in the Tuesday *New York Science Times*: The breakthrough is at hand; this time we've got it right; theory and practice will be forever altered; we have really made fantastic progress, and there is now general agreement on the basics; further funding is required" (1995). Fodor hopes that we, the laity, will prove to be as cynical as he is. Let us not disappoint him.

But, once cynicism has done its essential work, let us turn away from it to ask the central question of what we think our institutions of learning are for. I may seem to have closed down the question by almost saying that they are for learning, but we must be brave enough to ask, *learning to what end?* This too deserves the meditations of lifetimes, so I will only assert with reference to our common traditions that it is *for a life worth living* and that for the scholar such a life *is lived in questioning*, "for questioning", Martin Heidegger said, "is the piety of thought" (1977/1955, p. 35). I would add that it is its fertilising power as well.

If questioning is what the humanities have to offer – which, I will be bolder to assert, is the academy's central social purpose – then the most promising trajectory for libraries has to begin by privileging the questioners rather than attempting to manage them. By this I do not mean giving them more political power or social status, rather that in our planning for the future of libraries we need to embrace the full disciplinary variety of what they in fact do as scholars. We need to understand what that variety implies and refurbish our institutional inheritance accordingly.

Hence allow me to put aside my singular experience as a more or less conventional scholar in favour of the diversity of the "epistemic cultures" evident to practitioners of humanities computing and to librarians alike. I share with Greg Denning the view that disciplinarity is something that must be transcended (1996), and with Northrop Frye the idea that each discipline is only a place to start – that the important thing is to learn within a structure which can expand into all other structures (1988, p. 10). But from the expatriate perspective of humanities computing, the disciplines are a given. What matters to practitioners like me is what matters to the ethnographer: to get to that which makes each epistemic culture as it individually is. Clifford Geertz has argued that for these cultures, this is best done by entering into each imaginatively through its "tropes and imageries of explanation" (2000/1983, pp. 22, 157f). In doing so, one discovers not merely that basic terms, such as "theory" and "explanation", vary widely in meaning across the disciplines but also that the form, manner, requirements, location and expressive medium of work are highly individualised. Even the conception of what is and what is not scholarship has no consensus.

Hence we must beware of accepting any one disciplinary perspective of what the library should become – and so look to the backgrounds of those with the visions. Fabian notes that,

Customarily, we content ourselves with the monistic premise that it is a research library's task to secure *the* literature of scholarship. But the demands of scholarly work differ in different domains, and even within one domain they need not remain static. Since the

needs for bibliographic resources are variable, expectations regarding the institutions that supply the resources cannot be uniform.... Specific needs depend on the structure of the research activity itself. (1998/1983, p. 5)

He cites the most obvious cause of confusion, in the failure to notice the differences that distinguish the sciences from the humanities. Broadly speaking, the sciences (natural and social) do not need the library for their primary material at all; their demand, rather, “is usually for modern research literature – i.e., for a body of literature that may be extensive but that is essentially homogeneous” and so relatively easy to automate (p. 5). For them the library serves essentially as a warehouse and, with increasing digitisation, is reduced more and more to license-holder of access rights. The humanities, however, “display a different, and more structurally complex, need for research literature”, and this complexity grows with the historicity of its research (p. 6). “In whichever discipline, humanistic scholarly work is... in the tradition in which a text may be more or less significant but... can never become so obsolete that it could be, or should be, eliminated” (p. 7). Thus, for example, an essay on the history of the labyrinth, published in *Orientalische Literaturzeitung* 22 in 1919, or a neo-Latin treatise on the cult of the mother goddess published in *Mnemosyne* 2 in 1935, neither of which may have been taken off the shelf in more than a generation, may suddenly be required. So may a 1st edition of T. S. Eliot’s *Four Quartets* (1943) or a 10th-century manuscript of Prudentius’ late 4th/ early 5th-century poem, the *Psychomachia*. It is of course inconceivable that we would ever even attempt to supplant the originals of Eliot and Prudentius with digital editions, however good these may become. But we are apt to overlook the fact that the German essay from 1919 and the neo-Latin treatise from 1935 are unlikely ever to be digitised.

If we turn from resources of the research library back to the end-makers of knowledge who work in it, the situation is even more complex and difficult to manage. Variation in ways of working is characteristic not merely across disciplines but within them, indeed within individual scholarly projects. No canonical set of methods or tools implementing them seems likely. Here I verge on a major research question for humanities computing and for libraries, namely whether it is possible to devise even an open set of methodological primitives for the scholarly end-user, and if it is, then how to conceptualise them, at what level of granularity. Sociological research into what library-users actually do is undoubtedly useful, but like all such research, its power comes from its self-imposed limitation. We must do this research, and continue to do it, but must also move on. To echo McGann, the scholarly problem is to imagine ways of working we do not know, to give scholars the means of imagining them.

6. Reflections

I said at the outset that because of our common methodological vantage point on the disciplines of the humanities, we share a responsibility to ensure that the knowledge-making tools of computing best serve them. I have argued that it is only when we conceive of these tools as primarily for making knowledge rather than for vending data that scholarship is well served. But I have not said what I think this service-of-tools does to the humanities or to those of us who, in our involvement with tools, serve the disciplines. Allow me to conclude by commenting on the implications of this service and of its association with tools.

Direct involvement with tools has traditionally been associated with those whom Puck in *Midsummer Night’s Dream* tellingly calls “A crew of patches, rude mechanicals” (III.ii). The sentiment echoes centuries of aristocratic prejudice. Not long ago the great majority of

scholars in the humanities blanketed all computing with that prejudice. (I once overheard a senior academic quote Puck's very words to describe colleagues of mine as they were setting up for a demo.) But the history of the word "servant" suggests an ancient strategy for the underdog: to shift attention away from social distinctions to a common social purpose by making everyone servant to a universal lord in a realm beyond this one. A variant more apt for this occasion is to argue that the skilled maker of things is "servant of the work to be done" and that in such service is "perfect freedom".¹⁶ Service to the work is thus opposite of the self-abnegation suffered by the head housekeeper in Robert Altman's film *Gosford Park*: "I am the perfect servant", she says, "I have no life." Rather it speaks to the ongoing rehabilitation of common know-how in the interaction of scholars and craftsmen. The long and complex history of this rehabilitation is well beyond my scope, but computing has made it required reading.¹⁷

As we are all aware, computing not only makes know-how prerequisite but requires it to be expressed as a formal, abstract procedure, somewhat like a recipe. The origins if not inner nature of computing are mathematical, hence its early success in the natural sciences, whose imaginative language is mathematics. Early reactions of the humanities to computing predictably followed the pattern of their antipathy to the sciences, whose social and intellectual superiority was proclaimed by C. P. Snow famously in 1959. His two-cultured polarisation can be followed, for example, through the claims of boastful scientists on the one hand, and on the other the fears of total control gone badly wrong.¹⁸ Interesting as this culture-war is, it has tended to obscure the more important epistemic difference that has separated the sciences from the humanities. The core distinction was brilliantly drawn by Wilhelm Windelband, who contrasts the *nomological* or law-governed sciences from the *idiological* or particularising humanities. Thus, Ernst Nagel explains, the sciences "seek to establish abstract general laws for indefinitely repeatable events and processes" while the humanities aim "to understand the unique and nonrecurrent".¹⁹ To a certain extent, the nomological and idiological ways of thinking apply to different realms, of nature and culture respectively. But particularly in the social sciences it becomes obvious that the distinction is also partly a matter of stance. Carlo Ginzburg puts the matter in a nutshell when he says, "The tendency to obliterate the individual traits of an object is directly proportional to the emotional distance of the observer" (1989/1986, p. 112).

Hence my point: that the idea of method is problematic to the disciplines of the humanities precisely because method requires keeping one's distance from individual objects and focusing instead on common patterns and procedures. The humanities work differently. In contrast to the nomological sciences, their research "does not endeavour to grasp the concrete phenomenon as an instance of a universal rule", Hans-Georg Gadamer argues, but how particular people, artifacts, ideas or techniques are as they are (2000/1960, pp. 4-5). Method precisely turns away from where the chief interests of the humanities lie.

Hence, furthermore, my question: what then happens when a device that is as purely procedural as anything we have imagined, and which requires the precise articulation of method before it can do anything useful at all, is taken on by these anti-methodical disciplines?

What I think *is* happening is the creation within the humanities of a conceptual space within which we may experiment on cultural artifacts *as if they were natural objects*.²⁰ We can then compare the results of our experiments with their study by other, traditional means. From that comparison comes, one hopes, improved knowledge of the artifact, but the primary and far

more revolutionary value is to address the fundamental although almost untouched question of method for the humanities: *how do we know what we know?*

I have quickly breezed by more than one complex argument in bringing you to this question. But I have spoken for quite some time and now really must come to the sharpest point I can, which is this: that holding to and asking relentlessly the question of method is the surest way of seeing to a digital future for libraries worthy of their past. Delivery is an intellectually poverty-stricken idea. Even recombinant potential, for all its appeal, is far too passive a virtue. I realise that answering to your generous invitation to speak here, in this great city, in this wonderful country, with a question, may seem at first a poor response. It is no architect's diagram. It is a course of study. It is, I think, what the humanities informed by computing have to say to their core social institution.

“This is the age of methods”, Charles Sanders Peirce declared in 1882, “and the university that is to be the exponent of the living condition of the human mind, must be the university of methods.”²¹ Let the disciplines do their thing. Let us nurture “the living condition of the human mind” by focusing on method.

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Endnotes

¹ I refer to the parable told in the Pali Buddhist canon, *Udana* 66, in *Khuddaka Nikaya* 3 (for which see www.accesstoinsight.org/canon/sutta/khuddaka/udana/ud6-04.html), and known in the anglophone world via e.g. John Godfrey Saxe's 19th-century poem, "The Blind Men and the Elephant".

² See, for example, Rykwert 1988.

³ This is Jerome McGann's pointed criticism of all current digital work, including his own (2002: 74).

⁴ See e.g. Buchli 2002; Prown 2001.

⁵ See Brin and Page 1998; for an early technological expression of the sociological principle underlying Google's PageRank, see Thompson 1979.

⁶ This is in reference to my ongoing personification project; see McCarty 2005: 53-71.

⁷ In 2004 the monthly average for an academic salary in Poland was 430 Euros (ca. \$700 AUS or £300) gross (Kwiek 2004). The problem of low salaries is such that in the region "staff are forced to seek supplementary sources of income, including in some cases 'another [full] teaching load at one of the private universities' (Brennan et al 1998).

⁸ See Pliny the Younger, *Epistulae* 3.5.14-17, discussed in McCarty 2005: 85.

⁹ Throughout the following I am indebted to Graham 2005.

¹⁰ See my discussion of the problem of information with bibliography in McCarty 2005: 109-12. For the brilliant phrase "impression of information" see Nunberg 1996.

¹¹ Note the advancing technology of "rapid prototyping" (also known as "desktop manufacturing", "solid freeform fabrication" or "layered manufacturing"), tracked for example by the Rapid Prototyping Home Page, <http://www.cc.utah.edu/~asn8200/rapid.html>.

¹² For recent work along these lines see e.g. Poovey 1998; Burke 2000.

¹³ See the historical essays in Daston 2000; for the philosophy see e.g. Hacking 1983 and 2002.

¹⁴ See Beacham and Denard 2003 and the projects of their newly created King's Visualisation Lab, www.kvl.cch.kcl.ac.uk/.

¹⁵ I am indebted to the vivid lectures of Professor Simon Eliot (Reading) for one possibility for the conditions of reading in the Victorian period.

¹⁶ Coomaraswamy 2004/1937: 160; cf. 288.

¹⁷ See Burke 2000: 13f and *passim*.

¹⁸ Thus Herbert Simon and Allen Newell proclaimed in 1958 that "the digital computer and the tools of mathematics and the behavioral sciences" would within the following decade rescue us from "vague and nonquantitative" thinking of persons relying only on "judgment and intuition" and make organizational life a science (4-5). Their claim that "there are now in the world machines that think, that learn, and that create" (7-8) made it seem that replacement of humans, at least in the large domain of problem-solving, was on the immediate horizon. One decade later, Stanley Kubrick's and Arthur C Clark's *2001: A Space Odyssey* gave us perhaps the most memorable portrait of rational control taking charge. For computers in

science fiction, see Vos Post and Kroeker 2000. For a sobering discussion of the potential for computing to go horribly wrong, with citations of actual cases, see Smith 1995.

¹⁹ Nagel 1961: 547; Windelband 1904/1894; “idiological”, often confused with “ideological”, is not attested in the *OED*. Daston points out that “the oldest and, in somewhat dilute form, the most enduring” answer to the question of what the sciences focus on is Aristotle’s (*Met* 1027a20-27): “that which is always or for the most part” (2000: 15).

²⁰ I have worked out a preliminary version of the argument in McCarty 2006 (forthcoming).

²¹ Charles Sanders Peirce, “Introductory Lecture on the Study of Logic” (1882, W4, p. 379)