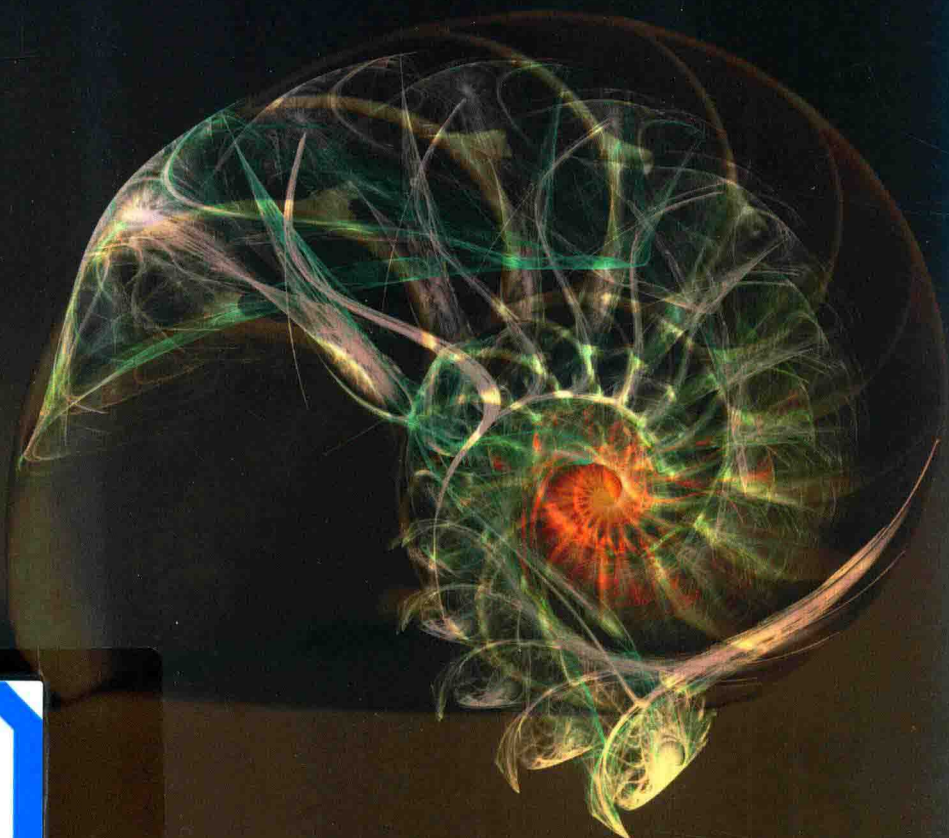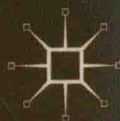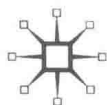# Humanities
Computing

WILLARD McCARTY

Humanities Computing

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To Harold Short, *nisi tu* …

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Preface to the Paperback Edition

In the Acknowledgements to the original edition I quoted Jacques Derrida to express my ambivalence and melancholy at finishing a book I had been mulling over and working on for many years. Then, in hope of a resurrection, I added John Milton's soaring declaration from the *Areopagitica* that 'books are not absolutely dead things'. But, I realize now, to have the 'potency of life' Milton ascribed to books, 'to be as active as that soul whose progeny they are', means that they change with us, their readers, and with the world we inhabit. Some bits of a book retain their truth-value or relevance, other bits become quaint, musty and then in time interesting for what they tell us about how people once thought and wrote. Insufficient time has passed for much of historical interest to have surfaced from this book but enough for a paperback edition to require comment and invite reflection on the bits which I think remain true to the field and those that have been superseded.

This would not be happening if our tendency to professional amnesia and naïve belief in technologically deterministic progress were winning. (They aren't, but the battle continues. Vigilance is still called for!) There are now signs that we may one day have a genuine history of digital humanities and with this history a perspective from which a trajectory for the discipline can at last be glimpsed. A few who suffer from lack of history assert that 'humanities computing' denotes an irrelevant set of concerns quite distinct from those of 'digital humanities'. It's true that the former was a child of a different time, one ruled by the defining grip of the Cold War. It is abundantly clear that the onset of the Web in the mid to late 1990s brought about a diluvian change in the discipline and became part of if not directly energized a slower change in scholarship. But to sever the discipline so rudely from its past and so heedlessly deprive it of continuity with its previous half-century of work is to render it directionless, hence vulnerable to whatever forces might wish to co-opt it. *Mirabile dictu* – and it does seem a miracle to someone who cut his rhetorical teeth on colleagues' dismissal of and contempt for computing – digital humanities has become an object of desire and so worth stealing. For this reason, were I to rewrite the book's last chapter I would move the seventh item on my

proposed agenda, 'Writing history', to first place, which it must inhabit. But more about the agenda later.

Humanities Computing was written in direct response to personal experience with my own and others' research and to the many claims made in preceding years for the value of subjecting the interpretative disciplines to the rigour of algorithmic methods. Intense struggle over a decade and a half to render Ovid's imaginative language computationally tractable (pp. 55–71, below) led me to the idea of modelling that is this book's central concern and the subject of its first chapter. It seemed to me then, and seems to me now, that the stark oxymoron which became the book's title captures what modelling is all about: collision of two forms of reasoning, or to paraphrase Jerome McGann and Philip Davis together, crafting of a gap between representation and what it stands for, not to eliminate difference but to open up a cornucopia of difference for us all to feed off and develop (pp. 1, 4, below).

There's truth in Brian Cantwell Smith's argument, also from 2005, that the genius of the digital computer is to make digital representation irrelevant. Belief in that irrelevance puts the machine's reasoning processes in a black box and turns our attention to their effects on people and cultures. This book holds to the opposite belief in the microcode of the discipline. It struggles to pop open that black box and, as Ian Hacking recommends, 'take a look' – by which he means much more than just looking, or thinking or discussing in isolation from one another. He means a kind of reasoning that puts them all together with making and from them crafts means for intervening in the world. But as a result of fascination with those inner workings through years of interventionist analytical modelling, I gave short shrift in the book to simulation and the question of complexity (pp. 34–5, below), which now seem to me a large part of the future for digital humanities. Were I writing this book now I would devote an additional chapter to simulation of complex systems (such as we and our cultural expressions are), say what I think we can learn from its enormous importance in the physical and social sciences and give a far better account of it in digital humanities, especially in relation to gaming and the arts.

The chapter on modelling would doubtless change as a result: I would put at its centre historian David Gooding's crucial work on construal (e.g. 1990), which I had not yet encountered when I wrote the book. I would also devote much attention to the statistical modelling of patterns in textual data on both small and large scales, e.g. in studies of authorship and of literary history. I would argue that modelling is

what they are doing. I would find a much more perspicuous example of modelling than my own work toward an *Analytical Onomasticon* (pp. 53–71, below). Although labouring over the *Onomasticon* taught me most of what I know about the subject, including the great value of failure, the problem it attempted to address was too far beyond the state of the art then *or now*. Embarrassingly I did not take David Hilbert's wise advice, that a problem 'should be difficult in order to entice us, yet not completely inaccessible, lest it mock at our efforts' (1902: 438). Those pages on the *Onomasticon* mock me.

To my knowledge the strongest criticism of the book was provoked by its emphasis on the sciences. I reasoned along with those who argue for 'thing knowledge', distributed cognition and material culture that an originally techno-scientific instrument embodies cognitive tendencies from the sciences which must not be ignored and cannot be understood without bringing their originating contexts into view. Putting so much emphasis on the sciences was in fact implicit in the book's oxymoronic title: I wanted to invoke the very sense of the alien that upset those critics. It was an integral part of my programme to focus sharply on both components in the transformative collision of reasoning styles denoted by Natalia Cecire's formula, 'digital + humanities' (2012: 55). For this I remain not merely unrepentant but insistent. (In my current research I am using the anxiety techno-science has always provoked as an essential clue to the intellectual common ground of computing and the humanities.) In his keynote address to the Toronto digital humanities conference in 1989 Northrop Frye recollected similar hostility for his use of the word 'scientific' in the introduction to *Anatomy of Criticism* (1957). He noted that software programming and computer modelling, unknown to the humanities when he wrote, were closer to what he intended (1991). But they too are scientific – if also responsible for changing our idea of the meaning and scope of science. For the humanities, and for digital humanities especially, there is no avoiding the great engine of 20th- and 21st-century change, of which computing is its most potent expression. The annoying distinction of separate cultures, used so often to rule the sciences out of bounds, is an increasingly obvious illusion: 'How does one distinguish between nature and artifact when we rely on artifacts to produce or afford access to natural phenomena...?' (Mahoney 2011: 159).

The sequence of the book, 'from the microscopic and private to the macroscopic and social' (p. 7, below), still seems right to me for a digital humanist's training as well as a rough description of the

discipline's history. The great rush into online and inevitably social media, taking hold as the book was being written, has unfortunately deprived many eager participants of the grounding in computational nitty-gritty to which the following pages are dedicated. Last year in a moving and humorous tribute Marco Passarotti quoted Fr Roberto Busa's assertion that such close work as I explore in this book is *sine qua non*, training us, Busa said, 'for an exploration of our own inner logic, which is the spiritual centre of the personal dignity and consistency of each of us'. This, Passarotti comments, 'is a continuous "know thyself" activity' (2013: 21). It is the implicit aim of all that *humanities* computing/digital *humanities* entails.

The question of genre addressed in Chapter 2 is still hanging, still being addressed and experimented with at all levels across several disciplines. It remains vexed by the separation of human and machine, which are kept apart as much or more by fear of techno-science as by technological insufficiencies. Terry Winograd's suggestion that we think in terms of habitat or 'interspace' rather than interface and Jerome McGann's insistence on resonance beyond interaction remain as cogent (pp. 74f, below). Winograd's 'new ways for people to communicate with other people' online have developed beyond anything I anticipated in 2005 – but, I fear, to the neglect of new ways for people to communicate with themselves, with artificially intelligent approximations and, for editors and readers of texts, with authors. We are as far as I know still lacking detailed comparisons of printed books in their expressive range and power to digital productions, as I attempted briefly to explore in Chapter 2 with Dodds' *Bacchae*. We still use the problematic term 'digital library' mostly letting pass without comment the challenging operational differences which it could reveal if pressed. How do we in fact and in detail use our own and others' digital collections?

My recommendation of ethnography and its explication in Chapter 3 as meta-discipline for exploring disciplines seems now as solid an idea as ever. But now I would say more about how interdisciplinary research can be undertaken, with what kind of expectations and perils, as counterbalance to the dominant focus on what interdisciplinarity (a reifying abstraction) might be in relation to other kinds. (See my chapter, 'Becoming interdisciplinary' in the forthcoming *New Companion to Digital Humanities*, ed. Schreibman, Siemens and Unsworth.) The focus of Chapter 3 on how in any particular case 'we may get to the disciplinary conditions from which specific methods arise as desire or need direct' seems right as well – with one serious

qualification, however: the tendency in the very idea of method to confuse roles with rules. I find the same problem in that 'intellectual and disciplinary map of humanities computing' (p. 119, below), which in the manner of a cosmological diagram implicitly asserts definition of our disciplinary world as a 'Methodological Commons' with 'formal methods' at its core. What that map mapped was the institutional environment in which the mapping was done. But digital humanists are still in the process of figuring out what kind or kinds of environment might be most conducive to that which the discipline is becoming. The big problem with this map is that presenting it as 'a model *for* the field's extensions of itself into the humanities' is prescriptive – a political act. Oddly I argued against precisely that at some length in Chapter 1 (pp. 32–4, below) but did not, as I would now, carry over the lesson into Chapter 3. But an even more serious problem is the implicit suggestion in 'formal methods' of a finite set of methodological primitives, i.e. an operational axiomatic bedrock for the discipline based, as Hilbert's formalist ambitions were, on pure manipulation free of significance (see pp. 81–2, 167–8, 217–20, below). To leave meaning to the other disciplines would be fatal. I suspect that the anxiety of the time, over whether the discipline had anything to say for itself, made the chimera irresistible – though the question of autonomy remains. But that is a subject for another book.

The power of examining a discipline's 'tropes and imageries of explanation' (Geertz's phrase) remains, I think, primary to explorations of disciplines other than one's own, and then perhaps one's own. This power has been demonstrated many times over by another scholar of whose work I would, if rewriting this book, take much more account: Evelyn Fox Keller. Among many other things I commend to your attention 'Language and Ideology in Evolutionary Theory' (1991) and *Making Sense of Life* (2002).

Chapter 4, Computer Science, was intended insofar as possible to provide as simple an account as I could manage of the discipline's mathematical and logical aspects in their historical origins. Again in the spirit of oxymoronic collision my aim was to confront head-on what digital humanists were at the time and perhaps still are mostly avoiding. Had I known Hugh Kenner's *The Counterfeiters: An Historical Comedy* (2005/1968) this chapter would have grown. But I also wanted to get close enough to a recognizable description of computer science to provoke computer scientists, other than those two who helped me with it, to offer commentary and corrections (which, alas, has not happened). Since then I have not seen much evidence of systematic,

institutionalized cross-talk between digital humanities and computer science apart from the Chicago Colloquium, though steps are being taken at the University of Western Sydney. The creative arts (which take what works and use it) have been ahead of the humanities in this respect since the post-war beginnings of digital computing. See, for example, the journal *Leonardo* and its several spin-offs, especially its book series; see Hannah B. Higgins and Douglas Kahn's *Mainframe Experimentalism* (2012). A rewritten *Humanities Computing* would pay very close attention to the arts.

For a long time it has been broadly obvious through the channels of science fiction and other forms of popular culture that robotics would one day put before us a device that requires no hype to be considered a 'life's companion'. Only a matter of time, I say. The desire for such an entity is clear, as we have seen recently through such films as the Bollywood *Enthiran* (2010), Spanish *Eva* (2011), the Swedish *Äkta Människor* ('Real Humans', 2012) or 'Be Right Back' from the British *Black Mirror* (2013). In 2013 the Science Forum of the IEEE International Conference on Robotics and Automation, at the instigation of roboticists, hosted a session entitled, 'Robotics Meets the Humanities'. An additional chapter? The hypothetical rewritten book grows again.

I have already taken Chapter 5, Agenda, to task by moving to top place the writing of a genuine history, from whose perspective the facts we have in abundance become questions toward a realization of how we got here. My comments on the *Analytical Onomasticon* will have suggested why analysis cannot come first. With one exception (computational stylistics) we not only do not know how to advance beyond basic corpus techniques to a genuinely *close*, i.e. intimate co-reading but have no language in which to theorize the problem. Theories from elsewhere are on offer, as McGann has demonstrated (2004b), but which of these fits digital humanities well enough not to pull it disastrously off course? This, again, is the question of which course we are on. The move that Franco Moretti has championed (but Mark Olsen advocated a decade earlier, at the MLA in 1991; see Olsen 1993) ironically requires us to trade close reading of individual texts for close reading of experimental results (Sculley and Pasanek 2008: 417). This may suit the literary historian who has already done his or her close reading, as Moretti has, and so should be welcomed, but as is so often the case many seem to have taken it as a replacement for a practice away from which literary theory has turned. The same bandwagon-effect with the same deleterious effects is well known in digital humanities.

The discussion of 'Disciplinary relations and kinships' as an agenda item seems now to me both naïve and excessively tentative. For reasons Frye understood well, autonomy is basic to a discipline's integrity and survival. Underscoring the importance of Alan Liu's question long before he asked it (2012), Frye observed of his own discipline exactly what we can see in ours now: that 'the absence of systematic criticism has created a power vacuum, and all the neighboring disciplines have moved in' (1957: 12). Where indeed is the criticism in digital humanities? Like literary studies in the mid 1950s we are now 'in the cultural situation of savages who have words for ash and willow and no word for tree' (13). Digital humanities still cannot adequately theorize what it is about because 'the terms in which such formulations can be cast are, if not wholly nonexistent, very nearly so. We are reduced to insinuating theories because we lack the power to state them' (Geertz 1993/1973: 24; p. 150, below). And that is not a problem which can be solved by being useful to others. The knowledge and wisdom gained from the work in crafting useful products does, however, offer raw material for a language that would allow us to make sense of ourselves and so make sense of ourselves to others. The resources digital humanists have built are not in themselves the discipline's achievements but materially uttered questions tending to one big question that will be a great achievement once addressed: what are the organizing or containing forms of digital humanities' conceptual framework? (Frye 1957: 16)

To me the most interesting problem regarding forms of publication and conversational activity, only touched on in Chapter 5, is extending the 'mantle of recognizable scholarship to cover ... the software arising from this work' in digital humanities, which as noted depends on the ability 'to *read our machines*' (p. 210, below). The literature on 'thing knowledge' (Davis Baird's phrase), 'epistemic things' (Hans-Jörg Rheinberger's) or 'things that talk' (Lorraine Daston's) has grown enormously since the turn of the century and demands complementary work from software studies and from digital humanities especially. The unique nature of computer software, as Mahoney's editor Thomas Haigh put it, 'a self-executing text bridging ... mathematics and machinery' (Mahoney 2011: 7), immaterial yet materially effective, brings us by a different route back to the collision that I celebrate in the title of this book, the crash-site that needs interpretation. Much more in the rewritten book would now have to be said about the hermeneutic puzzle of software in light of this literature. Hackers will know well their online equivalent (in blogs with bits of code,

breadboard wiring diagrams, videos and photos) of Renaissance engineers' communication through diagrams and drawings (Ferguson 1994). A start has already been made but needs sustained critical attention.

The bibliographic problem, or 'Doing the homework' (pp. 215–17, below), looks considerably different now, again because of the extent to which the Web has grown and become part of ordinary research life. As I found out in working on *The Humanities Computing Yearbook* in the late 1980s, digital humanities had already put comprehensiveness beyond reach or sense. Now it is hard to imagine that anyone would try. It is not just or even primarily a matter of the shift from difficulty of accessing to difficulty of coping with secondary literature. The bibliographic problem has become the problem interdisciplinary research, since research now, only with the greatest (and I think doomed) effort, can remain within well travelled and well structured disciplinary ruts. In other words, the whole style of doing one's homework has changed, even what it means to get that homework right.

Evidence of an early stage in that shift is among the first things one is likely to notice about *Humanities Computing*. Even for an obsessively referential author, it seems odd now to plow into such a thicket of quotations as meet the reader of this book – evidence, I have just suggested, not simply of diluvian change in access but of early days in digesting the riches. Consider the prefatory and often verbose gestures of obeisance, gratitude and respect in early printed books, which today may seem barriers between reader and text. This book was in its way similarly beholden to an older, far more accomplished and powerful establishment. Roaming far and wide through its disciplines collecting what one can is more than ever imperative to connect digital humanities with them, to grow and strengthen it. Obvious referentiality beyond digital humanities helps make that point. But we grope for fit styles of expression. None of what we find will in fact do. Other signs of reaching out are the length of the bibliography, density of internal quotations and a rather formidable index, analytical to an extreme, with its own way of denoting the levels. But my point in putting this book's attempt under a microscope is not to identify changes I would make (of which there are many) but to suggest how questions of style and design are informed by the discipline's history, by its (if I may) trajectory. Form and content are, we know, inseparable.

That is enough, I think, to indicate both this author's delight in finding so much he can stand by and so much he would change better to be true to the maturing of digital humanities over the last dozen

years. My thanks to Benjamin Doyle, Senior Editor at Palgrave, for the chance to propel *Humanities Computing* into an extended life in paperback and for the suggestion that the contents might need comment.

Willard McCarty
February 2014

Acknowledgements

Many years ago, as a budding literary critic, I made an attempt to identify *all* allusions in about twenty lines of John Milton's *Paradise Lost*. The project began with the sleuth's mundane pleasures, soon plunged me into utter frustration as the allusions multiplied out of all control, then, suddenly, ended in the realization that the project had been wrongheaded from the start: clearly Milton's verse was resonant rather than only referential. Now, attempting to acknowledge the intellectual and personal debts accrued in the writing of this book, I come to a similar realization: that, as Milton's German Pietist contemporaries said, *Denken ist Danken*, 'to think is to thank' (Steiner 1978: 21).

Help has been everywhere at hand during this project: directly from friends, teachers, students, colleagues and institutions, indirectly through the wealth of literature in the numerous disciplines to which humanities computing is related. (Yes, the impediments were there too, some of them quite serious, but these no longer matter, except as fuel to the fire.) Before turning to those who helped directly, allow me to register my gratitude to significant others whom I have not met – disciplinary masters, such as Clifford Geertz, Peter Winch and Solomon Feferman, who have written for the intelligent non-specialist, or simply written so well that the likes of me can follow. In doing so (may their tribes increase) they have opened up many avenues of research I otherwise would not have been able to follow. In this book I struggle to be like them.

Contemplating the end of a project that began decades ago, these acknowledgements are bound to seem, as Jacques Derrida said in his *Work of Mourning*, words spoken at a death, to put the seal on the entombment of ideas and feelings, inevitably before their time, within the covers of a book. There would be much less here that is worthy of such an expensive burial if it were not for the help I have received. But even so, the burial would be hopeless were it not for the truth that 'books are not absolutely dead things, but do contain a potency of life in them to be as active as that soul whose progeny they are' (Milton, *Areopagitica*). Hence helpers and helped alike must turn to the future, giving so that others may give. That is *why* this book has been written. I invest all my hope in those who read it and by their questioning

show that questioning is not just the piety of thought but its fertilizing power as well.

The book was written, start to finish, during my 2003–4 sabbatical year, with a generous grant from the Arts and Humanities Research Board and the strong support of the Centre for Computing in the Humanities (CCH) and the School of Humanities at King's College London. To the Director of the CCH, Harold Short, and the then Head of School, David Ricks, I express my thanks. The valiant efforts of those who took up my various duties were also key. Ray Siemens and Laszlo Hunyadi, both on leave from their own universities and in London, taught my classes. John Lavagnino did various other things on my behalf. My time off coincided with rapid growth of my department and its physical relocation, yet I was able to work undisturbed. My colleagues in the CCH have professed that during this time of enormously increased workload they did not miss me. I choose to think otherwise and here record my profound gratitude. Together they have made the best sort of working environment this man could imagine.

Years ago, when we were both in Toronto, Jed Buchwald was the first to tell me that I had to write what has turned out to be this book. Some time later I found myself sitting at a table, in a hotel not all that far from London, listening to people who should have known better declare that humanities computing did not exist. Actually the experience has been repeated numerous times in various venues, physical and virtual, but this one sticks in mind because I was then moved to write the first paragraph towards the manifesto Jed had told me I had to publish. Some years later he generously invited me to give a paper at the Dibner Institute (MIT) that became a piece of it. About that time, back in London, John Lavagnino wisely advised me over coffee that I should allow the one paper that I kept rewriting and publishing under different titles to become the book it was trying to be. So, at last, I did. He has been generous with his great learning throughout its composition.

Several friends and colleagues gave their time to reading and commenting on portions in draft. Brad Inwood, a good mate from graduate student days at Toronto, commented in detail on Chapter 1; so did Jan Christoph Meister, some of whose comments became parts of my text. So also with Wendell Piez's comments on Chapter 2. Peter Shillingsburg and Ray Siemens looked over both chapters. Peter Galison read what became a significant portion of Chapter 1, assuring me it was not utter tripe. Meurig Beynon and Steve Russ magnanimously