Enactments, networks and quasi-objects: a stranger in a strange land

When I began work on this chapter I was struck by the question of just what were the stories of the Deakin past that I have told myself and perhaps bored others with over time? What are the stories I have forgotten, edited out of easy recall or suppressed? And, then, perhaps more importantly, what is the framing device, the sensibility I now bring to a past however patchily recalled? I put these considerations “up front” as it were and wonder if I am not writing what Bruno Latour (2000) calls a scientifiction, “using the tools of fiction to probe a scientific or a technological domain deeper than it can itself do with its own talk of efficiency and profitability” (p.78). While I’d never describe Deakin back then as efficient, let-alone profitable, I wonder about the efficacy of reflexivity in tracing a trajectory which owes as much to dumb luck, chance and the perversity of formal education organisations. Still, the urge to make sense, to give order and describe patterns remains strong in all of us.

“Looking forward to working with you in July”. These words were spoken to me by a senior academic in the Education Faculty at Deakin before I had been interviewed. This was my introduction to Education at Deakin and I must confess it made me a little jumpy. I had little experience of job interviews and when I walked into the small meeting room which was located in a relocatable which housed “the office” of the Faculty and saw fifteen or more faces look up at me I did wonder
what I was letting myself in for. All I recall of that interview was stumbling through the questions (for a junior academic appointment) and being prompted on more than one occasion by the same senior academic.

How I got to this point is useful to briefly recount as I think it may help make some sense of what follows. Sense making is something that is often seen as a good thing. I am wary of claims of making sense. The making part is fine. I wonder about the sense. Does it all have to make sense and to whom? Nevertheless, what I hope this little contribution to the collection will do is provide the reader with one more enactment (Mol, 2001) of Deakin way back then and hopefully allow us to mull: “how on earth did this all hang together, if indeed it can be said to have?”

My PhD was in physical organic chemistry at ANU. It was past its use-by a decade later when machines were able to do the analysis I had struggled to do manually and with much less computational power. They don’t give PhDs to machines but given some of what now passes as science, I think the machines should feel offended. I had begun to use these machines, also known as computers, during my honours year in 1968, the year Intel was founded. Using a computer in those days meant submitting a large box of punched cards to be processed by a computer that lived in a large air conditioned room and occupied most of it and had the computational power of about one thousandth of that in current mobile phones. During the PhD I learned to work with a bigger range of computers, from those that provided an interface to equipment to what was then a new time-shared computer which had all of 8K of RAM in single user mode. It was here I developed a sensibility about these machines which was that they simply were good to do certain kinds of work to progress a research agenda. Always pragmatic, never over-hyped, it was always about getting it to work or do the job that was wanted.

I returned from ANU to continue my teacher training and then taught in a High school for a year before moving to what was then

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1 The John Curtin School of Medical Research at the Australian National University.
2 I had taken a studentship to undertake my undergraduate degree and that required me to teach for three years on completion of my study.
Melbourne CAE, a teacher training college. Here I continued to make, what I thought were sensible uses of various computers, building interfaces to equipment to support student practical work in Chemistry and writing software to automate some of the problem generation work for students. I also built computer models and simulations to support teaching and learned much about how much one learned when building such things and how little students learned when they used them. It was during this time that I was asked to manage the purchase of the College’s first time-shared computer and, around the same time, to lead a team that developed one of the first Graduate Diplomas in Computer Education. My interest in student learning was totally informed by literature drawn from educational psychology and, in the Department in which I worked, I was able to experiment with many different approaches to teaching the variously sized cohorts that passed through our program. There was no formal research during this time. I worked in a Department that taught Chemistry to would-be science teachers and the staff struggled to do research in their areas of specialism largely due to lack of equipment and resources. A modest amount of research in education happened elsewhere in the College but the Balkanisation of Departments made it difficult to work outside perceived disciplinary boundaries.

I came to Deakin armed only with my interest in computing and pedagogy and had no idea of the various intellectual agendas which the fledgling Faculty was developing. I felt like a stranger in a strange land. Just as my curiosity for exploring various pedagogies at Melbourne CAE was supported by my colleagues, at Deakin, I was able to pursue my curiosity about ideas in general which was fed by a number of very generous colleagues who would talk of their own agendas and intellectual influences. I was on a pretty steep learning curve. Broadly speaking, this was in sociology and I had only ever thought that psychology was all that mattered in terms of thinking about teaching and learning.

The other aspect of Deakin that I was abruptly introduced to was that Deakin then primarily taught off-campus students. In my first week I was greeted by two colleagues working in the computing area, Peter Evans and Robin Stevens. In the first few minutes of meeting it was a matter of thank goodness you are here, we have an off-campus course to write! I had no idea what these “things” even looked like so I dutifully
replicated what was then a standard model of structured weeks of activities supported by readings and, because it was a course about computers and education, we mandated particular computing activities. I have always described that work as committing almost every distance education sin in the book. I recall my awkward writing featuring prominently on the door of our assigned editor!

I never was concerned about my 'fish out of water' status in terms of adapting to teaching at a distance or my lack of awareness and knowledge of key critical thinkers and their work in education. What the Faculty was after was someone to drive or lead computer-related developments and, from my point of view, given what I had learned in my previous position, I thought I could shape a useful agenda and base my writing around these ideas. I had some firm non-negotiables based on my experience. The role of staff was an important focus. I was strongly of the view that if we could not influence colleagues to use these technologies to do their routine work in the first instance then there would be little or no chance of them exploring the use of computers to support their teaching.

It is important to recall that in describing what follows that this was a period at Deakin prior to the manic scrutiny of costs and the central manipulation of budgets to meet corporate university purposes. Without having the correct words for it at the time, we set out to establish a praxis around the use of computing technologies. We had initial ideas that were fragmented but which developed as we explored a range of practices and theory with our fellow academics.

When I came to Deakin in 1984 there was a kind of text factory in operation in the Faculty. Academics would hand write or perhaps type a draft of a paper or teaching materials. It was then word processed courtesy of a large typing pool (all women) who made use of what was then a state of the art Wang system complete with 8” floppy disks. This was at a time when there was a proliferation of brands of 8-bit microcomputers and the shift to the so called personal computer had begun. We acquired a small network of 8-bit BBC microcomputers and we had our Vice-Chancellor open the first microcomputing lab at Deakin, much to the chagrin of the folk in the IT Faculty. The Educational Computing Lab or ECL as it was known had plants, fish, and as supporting and friendly an environment as we could manage.
What I had learned from my years at Melbourne was that if you taught students in a particular way, more than likely they would pick up some of those habits in their own teaching. The ECL became a place that staff and students used routinely. I recall teasing Stephen Kemmis on occasions as he sat in his office typing on a typewriter. Stephen, apart from being most generous in his intellectual support was also someone who quickly learned how to exploit available technologies to support his work. I recall him writing a book with Wilf Carr and emailing floppy disks to and from the UK. He was highly influential in the Faculty and while some academics would often mutter that they were employed to write and not type, Stephen always demonstrated an uncanny ability to derive clever use from the various computing resources he used. The use of word processing software, even in its limited form, grew slowly to a point that when we were able to afford a few of the new fangled Macintosh computers (the breadboxes). Usage grew a good deal more. These were days when we shared a small pool of computers, staff would book computers to take home and our access to the Australian Research Network was via a long cable that ran all the way up the hill to a relocatable building, which was the ECL. In those days email was expensive. We had access to a text screen and in order to send email we had to use the screen editor, vi. I found it amazing that academic staff would go to the trouble of mastering enough of this ugly editor to send an email. The attraction of being able to communicate rapidly with colleagues in other parts of the world was highly attractive to many colleagues.

We had a practice of largely unquestioning support for any academic wanting to try most anything with computers in their teaching. There were some very ordinary things we supported but also many memorables. Stephen Kemmis and a team teaching a third year unit on

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3 We found some money to fund student helpers, known as Neddyl’s (after Nedly Seagoon, given that the lab’s name approximated that of the Goon Show character, Eccles!)  
4 The Australian component of the then embryonic Internet.  
5 The Faculty operated in a set of relocatables until a new building was built in 1992.  
6 This is largely Peter Evans and I. Peter was exceptionally good technically and, in those days, did a lot of coding and interface work to make things happen for various projects.
education were making use of a preliminary draft of a book David Hamilton (then in Scotland) was writing. Peter Evans developed software to allow students to comment on each week's set text on the BBC network. The teaching team would meet in the ECL and write a summary of the student comments and questions. The summary was then moved from the BBC network to the Internet point of connection and emailed to David. He considered the summary and then posted back a reply which was moved back onto the BBC network for students. By today's standards this activity is routine. It wasn't in the mid 1980's.

Our experience with on and off campus students and the use staff made of the various technologies contributed to a developing praxis of computer use in education. To me, with my science background, the technology remained a means to achieving something rather than an end in itself. I began to write small pieces about my thinking about computer use in education and teacher education. My first step in writing something larger came about as a consequence of a bid Stephen Kemmis and colleagues from other universities in Australia put together to evaluate a national computer education program. Stephen had written a small monograph with Colin Henry for teachers: a point by point guide to doing action research. With Stephen's encouragement, I modified that to address the study of computing in schools. This document was part of a bid for grant to conduct an evaluation to the Commonwealth Schools Commission. The bid was successful and I embarked on my first evaluation study in education. The monograph was the first of a further nine monographs which I wrote for off campus teaching.

I was still coming to terms with the likes of Illich and Freire as a result of being in the company of what was a large group of colleagues interested in curriculum and critical pedagogy led by Stephen Kemmis. I explored these new ideas as I wrote monographs like The convivial spreadsheet, The collaborative database, and Computers, nomads and other things. My reading ranged from influential thinkers about computing and media

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7 Along with Stephen Kemmis, Susan Groundwater-Smith, Shirley Grundy, Sue Willis, Stewart Bonser, Peter Evans and a number of others.

8 The other large group in the Faculty worked on educational administration under the leadership of Richard Bates.
generally (Weizenbaum, Turkle, Papert, McLuhan) and folk whose work I stumbled on such as Bruce Chatwin’s *The Songlines*.

My puzzling about people changing practices and the persistent problem of how to think about humans and computers continued. There was grist everywhere. Computers, despite their puny computational power began to take on a larger significance in the lives of colleagues who slowly came to see the advantage of a word processor to support their writing and, later, the convenience of dial up modems which allowed some work to be done from home.

I had begun to develop a critical sensibility about computers in education I think in part as a reaction to the over selling of the technology to schools and parents, in part arising from working on the national evaluation study and in part from working with colleagues for whom being critical was their stock in trade. A burgeoning literature concerned with computer use in schools was and remains for the most part utopian and generally insensitive to the major social justice issues which had long characterised schooling and about which I had become more aware since coming to Deakin.9

It was a time when reading groups of various kinds were active and a good friend and colleague Lindsay Fitzclarence encouraged me to join one that was operating in the curriculum group. Not long after I joined this group, Lindsay had distributed a pre-publication version of Henry Giroux’s *Border Pedagogy*. It was my first encounter with the notion of the post-modern. I vividly recall Stephen Kemmis coming to that meeting and posing the question to the group: “how can you work in a field where the sign posts change overnight?” At the time I had little awareness of the intellectual conflict between Habermas and Lyotard. But, intrigued by Stephen’s strong reaction, we formed a small group10 to further explore this intellectual territory. We began working through Giroux’s bibliography and were making heavy going of it. A chance visit by Bill Green from Murdoch at the time was pivotal. I recall a meeting

9 I was reminded, humourously, of the insensitivities to gender issues that I brought to Deakin by Jane Kenway when I left Deakin after ten years.

10 Lindsay Fitzclarence, Robin McTaggart me.
we had with him and so much of what was a tangled and confusing mess falling into some kind of order.\footnote{I was also unaware that the Educational Administration group in the Faculty had also been working literature about the post-modern. There was a gentle rivalry between the two groups.}

About this time the Faculty decided to make another appointment to the computers and education area. It came totally out of the blue. We advertised and ended up with applicants that were similar in background and expertise to Peter Evans and myself. This was at a time when I felt we needed to be working on better theorising of the practices emerging around computer use in education. I recall talking to Richard Bates about this and he pointed out that the Faculty, in trying to avoid mimicking the larger universities in Melbourne, would try and appoint from outside the mainstream. For example, if they needed to appoint an educational philosopher they would try and find a good philosopher who would commit to an educational agenda\footnote{Fazal Rizvi, another colleague most generous with his time and ideas probably falls into this category.} So we tried again and attracted an interesting field, one of whom was Bill Green. He was appointed to a lectureship in computers and education. His computer skills were low but his command of curriculum, literacy and, importantly the literature on postmodernism were invaluable. He and I enjoyed a productive relationship\footnote{Probably the most influential paper we did together was: (Green & Bigum, 1993)} from the early 1990’s which continued after I left Deakin. It was to Bill’s credit that he put up with my unorthodox idea set. It was also through Bill that we joined a small reading group in the Art’s Faculty whose field might be broadly described as Science, Technology and Society. I can’t say this involvement predisposed me to working with actor-network theory (ANT) subsequently but the papers we read and the conversations we had opened up for me ways of looking at the computer/human binary\footnote{A monograph (Bigum & Green, 1995) Bill and I wrote captures where my thinking was at that time about how to theorise the combination of human and computer.} in different ways. This conundrum had dogged my thinking for a long time. I did not know it at the time but one of the Arts group with whom we met was David Turnbull who is a distinguished scholar with a long record of work with ANT.
I think it is important, particularly given where my intellectual sensibilities now lie, to point to the physical layout of the Faculty at this time. There were a number of portable buildings which were linked by covered walkways. The office and staff room was at one end and so people would spend some time waking to and from this hub. It meant you would bump into people and, on many occasions, you’d end up talking about ideas for research, a new paper and so on.

During this time, colleagues generously included me in research grant bids, many of which were successful. I learned a good deal from many colleagues during this period. *Schooling the Future* with Richard Bates, Lindsay Fitzclarence, Bill Green and Rob Walker\(^\text{15}\) studied identity formation of students in the later years of secondary school in the early 1990’s. It was a period when there was significant change to many of the old patterns associated with schooling and work as the deployment of new computing and communication technologies began to reshape and disrupt (Fitzclarence, Green, & Bigum, 1995). Other projects included *Consuming Education* with Jane Kenway and Lindsay Fitzclarence and *Learning to change in devolved school systems, Mediating change: global/local pressures upon school performance* both with Jill Blackmore, Louise Laskey and John Hodgens and *Schooling and Learning in the Age of the Internet* with Jane Kenway and Bill Green.

In 1992, the Faculty moved into a new building and hosted the annual Australian Association for Research in Education conference. Bill and I decided, rather foolishly, to run an electronic salon in parallel with the conference. We were able to assemble a dozen or so excellent papers from key thinkers around the world and established an email list to support discussions. It was probably the first of its kind in education. It worked well for the overseas participants but was less attractive for those who attended the conference. During the conference the then federal Minister for Education came to open the new building. Deakin’s public relations office asked me to “show” the Minister the e-salon! I produced a summary list of external participants by country and arranged for him

\(^{15}\) Rob was the first appointed chair to the Faculty. He was and remains a generous and very supportive colleague. He always had an eye for the unusual, things that most education academics would not see as remotely interesting. We continue to exchange odd snippets.
to write an email to the list. I discovered later that he thought the e-salon was a hoax. What followed was amusing and informative. The Minister's email prompted a flurry of replies addressed back to him from people not only in his electorate but from around the world. These were “tidied” and forwarded to his office, at which point he apparently conceded that the e-salon had taken place.

In 1993, the university established the Deakin Centre for Education and Change and I was appointed Deputy to the Director, Jane Kenway. Others are better placed to write about the Centre but, to me, it was an attempt to give the very large amount of research coming from the Faculty a higher profile and also, to provide a means of making the products of this research work accessible for teachers. I recall arguing for the merits of a K-Mart style publication to accompany the normal designer publications which were only read by a small group of academics. I fondly recall a component of this publication being called bottom rungs. Lindsay Fitzclarence used to argue that a feature of much university teaching was akin to the careful construction of a ladder with the bottom few rungs removed which made access to the ladder almost impossible for students.

It was in the early to mid 90’s that what were to become two major foci for my research emerged. One came from my ongoing puzzling over the social technical binary which characterised so much of the thinking about computers in education\(^\text{16}\). I don’t recall how I stumbled into this literature. Oddly, it was not from the association with the STS folk in Arts. It was not an easy theoretical field but as I worked my way through the early ANT papers it provided a means by which I could draw together all of the key principles I had arrived at from mulling about how best to think about these technologies and educational practice. ANT opened a world of quasi-objects, of hybrids and monsters as Latour (1994) would put it. The social technical binary was no longer an explanation but something to be explained.

At that time ANT was something of an enfant terrible in social theory. However it offered an anti-essentialist approach to thinking about change. Anti-essentialist theorising also characterised much of the literature my colleagues employed in their critical pedagogy work. I have

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\(^{16}\) This manifested itself in terms of debates about social and technical determinism
a sense that some theoretical resources fit better with one’s mental terrain than others at particular times and ANT, for me, proved to get better in its fit over time. It was an example of what Richard Dawkins (1999) calls a selfish meme. The influentials at this time were Bruno Latour, John Law and a growing group of scholars drawn to this sociology of translation as it was sometimes called. Perhaps the thing about Latour’s writing in particular was its irreverence, its playfulness and its considerable scope. ANT concerned itself with alliances, network effects and actants. As John Law (1999, p.3) puts it:

> Actor network theory is a ruthless application of semiotics. It tells that entities take their form and acquire their attributes as a result of their relations with other entities.

At the time I had not thought through any relationships between ANT and critical social theory as was being enacted in various forms at Deakin then. Cussins (2000, p.340) points to a tension in this way:

> ANT differs from the Continental “critical tradition” in wanting to dissociate the possibility of critical understanding of science of technology from the necessity of being antiscience, or, as Bruno Latour calls it, antimodern.

At the time, my grasp of ANT did not permit conversations about such conflicts with colleagues.

Looking back on my interest in ANT, I recall a curiosity about some of the social theory that appeared to rise and fall in interest among colleagues at Deakin. Interests were often triggered by visitors or new appointments. In the days before the Web became such an everyday resource for scanning theorists and theories, it often took time for the work of a particular thinker to find its way into Education. I picked up on who most of the key influentials were in conversation with colleagues, going to reading groups and taking every opportunity to satisfy my curiosity about what seemed to me to be big ideas. Colleagues were always very generous with suggestions and advice. To me, having lived through the educational psychology fads which informed education during my time at Melbourne CAE, it seemed similar faddishness was associated with some of the social theory which came into play at
Deakin. Fads in theory are not of themselves a bad thing if the theorising works to achieve good outcomes for those who appear to be systematically disadvantaged in education.

I continued to read thinkers from outside the usual fields which informed educational practice. I recall pursuing a good deal of literature when so-called chaos theory bubbled into popular discourse\(^{17}\). I was intrigued by the mathematics and explored it via computer programs I wrote. By chance, I was offered a small off-campus unit in mathematics education which was more or less an elective that students did. I developed the unit around doing non-linear mathematics\(^{18}\). The unit was a great experience. There were teachers who worked in the unit who were much better mathematicians than I. There were teachers who struggled with the simplest of the mathematics. But we were able to collaborate and share ideas and ways of tackling some of the trickier elements. Apart from having them do some mathematics and reflect upon their learning, what mattered to me was the way I worked with them. I was less of an expert and more like someone trying to orchestrate individual achievements that could be shared and from which a modest amount of peer teaching could take place. Years ago, I had developed an interest in the separation many teachers have from their disciplinary base, i.e. teachers of mathematics rarely did mathematics, teachers of history rarely did any history and so on. This separation from what Colin Lankshear calls mature insider forms of practice remains a focus for me and it finds some expression in the other major research interest I developed, that which is now known as knowledge producing schools or KPS.

This still modest agenda had its beginnings in my work with teachers who had signed on to do a course in computing and education. These courses ended up being much more concerned with teacher professional development as they puzzled about the use they made of

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18 Gleick (1987, p.68) writes, “The mathematician Stanislaw Ulam remarked that to call the study of chaos ‘nonlinear science’ was like calling zoology ‘the study of non-elephant animals’”
particular computing resources they had to hand. In these courses we encouraged teachers to challenge many of the then and still now taken for granted assumptions about these technologies and education. I recall many telephone conversations with teachers over these issues and, on occasion, teachers would say that it was easy to be critical of much of what was happening in schools but a lot harder to make positive suggestions. It was this challenge that prompted me into thinking about what schools and teachers might do. I began to mull over a notion that countered the then current consumption of information logic that characterised the use of computing and related technologies in schools.

The notion of schools as sites of serious knowledge production became an interesting proposition. I explored these ideas with the teachers in the computing units I taught and had begun to think that this might be something of an option for the middle years of secondary school. I vividly recall talking to a primary teacher one evening on the telephone and she was most indignant. She insisted that primary schools do a massive amount of data collection, some of it not very well and they never did anything with the data they collected. This was the beginning point for KPS which did not begin to happen in classrooms until I left Deakin for Central Queensland University and was fortunate enough to bump into a Principal who had stumbled into this space from a different direction. The details are probably best captured in publications (Bigum, 2002a, 2002b, 2003, 2004; Bigum, Gilding, & Burton, 1988; Bigum & Rowan, 2009); (Rowan & Bigum, 2004) and the work of Masters and PhD students.

This approach to schooling is one in which students work on projects that are valued by and have value for the local community. The students typically generate a product or performance. The quality of the output is critical to the work being taken seriously by students and the community group for whom they are doing the work. Here access to expertise, mature insider forms of practice, is an important component. Often, the products draw comments from adults like, “wow, did kids do that?” An interesting outcome of this work is the sense of agency the

19 Sue De Vincentis and Carmel McGrath
20 This is a favourite quote of the Principal with whom I worked in Central Queensland, Trudy Graham.
students who participate in this work achieve. Perhaps more importantly, there is good evidence of students who were largely disaffected with school, re-engaging through a KPS project or two.

There were other threads that developed during my time at Deakin and were the basis of ongoing intellectual curiosity. A chance reading of Brand’s (1987) *The Media Lab*, drew my attention to two things: scenario planning and global money. I taught myself how to conduct a scenario planning exercise from online resources and Schwartz’s (1991) book, *The Art of the Long View*. What was of interest was that the process was designed to shift mindsets, which is another way of talking about learning. The technique was something I refined over time and I conducted a good many planning sessions with a wide range of folk.

My curiosity about global money was piqued by a conversation Stewart Brand had with Peter Schwartz and which is reported in the book. I recall being stuck by the volume and rate of growth of global financial transactions and that, as Schwartz argued, less than 10% of this money corresponded to material goods. This began a long interest in and curiosity about the global financial system and in particular the role computing and related technologies play. The recent collapse of large sectors of the financial system across the globe underlined for me the concern I have always had that the educational engagement with these technologies only ever looked at the trees and had no sense of or interest in the forest.

The use of computing and related technologies remains a key interest, primarily because the deployment of these technologies have, for the most part proved to have large negative impacts on the disadvantaged of the world. The prospect of greater impact, as these technologies continue to conform to the empirical observation known as Moore’s law is also an important ongoing interest. Kurzweil’s work identifies the exponential growth of not only integrated circuits in terms of price/performance (doubling now every nine months) but to a broad range of related technologies showing similar growth with different doubling periods. He argues,

21 As per the Global Business Network: http://www.gbn.com/
22 http://lifeboat.com/ex/law.of.accelerating.runs
An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense "intuitive linear" view. So we won't experience 100 years of progress in the 21st century — it will be more like 20,000 years of progress (at today's rate).

This consideration puts the ongoing interest in using computers in schools and for “educational purposes” generally into a perspective that needs serious attention. The history of technology also shows that the beneficiaries of most if not all technological change will always be those already advantaged.

A final consideration that marks my current interests but which I trace back to those beginnings at Deakin has been the emergence of the so-called read/write web. While these developments have been largely read in education as just more of the same, there is a growing literature that documents new social patterns as we move from a world dominated by broadcast logic to one which is characterised increasingly by many to many communication. There is an argument that this shift is akin to the shifts that the invention of moveable type, the so-called Gutenberg revolution produced. The work of Clay Shirky, David Weinberger and Kevin Kelly are typical of thinkers whose work is, in my view, influential about these shifts. If, as happened following Gutenberg, there is a decline in dominant social institutions which have grown up around the control of publication (Weston, 1997), the interests for the disadvantaged are again unlikely to be well served.

References


23 The ease with which anyone with access to the Web can publish has improved greatly.
