

Keeping Knowledge Local

Geoffrey C. Bowker
University of California at San Diego

Introduction

I attended in May 2001 a three day workshop on 'indigenous knowledge'. Our workshop was a follow-on from the Innovative Wisdom conference in Florida last year Article 26 of a World Conference of Science report (which led to controversy in the journal *Nature*). The offending article read as follows:

26. That traditional and local knowledge systems as dynamic expressions of perceiving and understanding the world, can make and historically have made, a valuable contribution to science and technology, and there is a need to preserve, protect, research and promote this cultural heritage and empirical knowledge". (p.4 Science International, September 1999).

The International Council of Scientific Unions (ICSU) took collective umbrage at this statement, arguing that there was no such thing as traditional knowledge and if there was it certainly had not contributed to science and technology and if it had in the past contributed then there was certainly no need to promote it in the future since the light of modern science could shine brighter and cheaper into local territory. I was part of a group of historians, philosophers and sociologists of science charged with defending Article 26 to ICSU.

'Innovative wisdom' is a nice phrase. There is a great dearth of words for what it is that locals have and scientists do not. If we call it 'indigenous knowledge' then we are denying the role of the urban dweller who has moved in from another area, or the *mestizo*, the half caste. Many anthropologists also oppose the term traditional. At a recent conference in Nairobi of signatories to the Convention on Biological Diversity, African delegates said that they felt insulted if their knowledge was referred to as traditional; 'indigenous' refers for them to community and is the correct unit of analysis. In Latin America, 'indigenous' is also considered a reasonable epithet. However, delegates from Morocco don't consider themselves indigenes and reject 'traditional', which has connotations of being backwater. ILO convention 169 refers to the rights of indigenous and tribal peoples; the Nairobi conference ended up adopting 'indigenous and local'. In the (highly ironic) Museum of Jurassic Technology in Los Angeles, an exhibit on local knowledge refers to a society established in Edwardian England for the Restitution of Decayed Intelligence!

Of course one is giving the game away at the outset if one says that some knowledge is local – since by extension, there exists some other knowledge which is universal. We produce knowledge which is true in all places at all times; they produce knowledge which is particular to their region. Bruno Latour and Harry Collins have in different ways shown us that our 'universal' knowledge is restricted to highly localized space and time: the space and time of the laboratory. When a science test starts with the phrase: "All things being equal...", asking then how fast a falling body will take to light, it points in the direction of all the work that is done in making other things equal - excluding vibrations, foreign products invisible to the naked eye, weather conditions so that in this very small, highly localized place, the laboratory, universal knowledge can be produced.

Mark Meadow and Bruce Robertson's Microcosms project (<http://www.microcosms.ihc.ucsb.edu/>) shows just what a strange array of objects university knowledge is conjured out of: they inventoried then exhibited collections of objects in libraries and in departments across the University of California system, showing how like they are to Cabinets of Curiosities. Further, as Latour points out, this highly localized knowledge can only travel along very sparsely populated networks (from one laboratory to another) before it begins to make the necessary set of alliances and affect (or effect, depending on your point of view) the world. So I don't want to say that at universities we produce universal knowledge and then in the outback others produce local knowledge. Knowledge is always firmly tied to a locality.

And to a temporality. ICSU took particular offense at the phrase 'traditional and local knowledge' because the state of Kansas in the US had recently voted evolutionary theory to be non-scientific and thus not teachable as science in the classroom. How, they asked, could we maintain lines distance between church and state – a long-cherished divide, constructed over several centuries, in Western science – without being able to challenge hocus pocus like the oxymoronic 'creationist science' or the knowledge of the shaman or astrologer? Local knowledge became *at this time* something which true science had to challenge – at other times the issue would not have arisen, or fear of the politically correct might have suppressed the assertion.

Imperializing disciplines...disciplining the Empire

Michel Serres long ago stated that his role as a philosopher of science was to keep the spaces between the disciplines open. Disciplines did what they did very well, but they also had an imperial tendency to deny any knowledge which did not conform to their way of knowing. I now turn to two examples of this imperializing tendency – a tendency which may be familiar in broad outline to all, but whose specific local threads merit attention.

The first example is of the Yolngu tribe in northern Australia, which has recently been carrying out combined environmental scientist/traditional knowledge bearer workshops on environmental land management.¹ The first problem is that aboriginal technology is fire-based (see Pyne) and for good historical reasons (the invention of the water wheel, for example) Western technology is water based. However, more was at stake than technological difference. By the Balanda (aboriginal name for the tribe of white Australians) understanding of the situation, the workshop was a chance for the aborigines and the white student scientists to learn something from the senior scientists. The senior scientists were teaching from an agreed body of knowledge: any differences between scientists were excluded from their discussion. For the Yolngu, the workshop constituted a different kind of performance. For their part, they were showing a traditional firing procedure used to renew vegetation. In their tradition, each firing was a separate historical event, achieved after several months of negotiations in which disagreements between clans were laid out and then settled in the performance of the firing ritual. So for the Yolngu, the workshop was the performance of a social space and of historically

¹ This example comes from Helen Verran's 'Transferring' Strategies Of Land Management: The Knowledge Practices Of Indigenous Land Owners And Environmental Scientists

constructed unity; where for the Balanda it was the performance of a neutral space and of an objective unity.

The second example is of bioprospecting in the Sonoran desert region of Mexico². According to the Convention on Biological Diversity, producers of local knowledge must be repaid by the pharmaceutical companies which seek to market drugs developed using that knowledge. Cori Hayden points to a few interesting difficulties here. One is that the person who sells the drugs in the local marketplace in the Sonoran desert is frequently an itinerant salesperson who picks up herbs and specifics from a wide range of sources. Should this 'middleman' be paid, or should the pharmaceutical company try to trace back the herb to its first user? Western science is very good at ascriptions of ownership – from the 'plis cachetés' of the eighteenth century on, and only that knowledge which conforms in some way to Western procedures will be recognized. So the locals have to produce something recognizable as knowledge according to agreed protocols of intellectual property. Further, some pharmaceutical companies now concentrating on bacteria and viruses as sources of new medicines – since they don't have the same cultural baggage as herbs and barks... .

Through these examples, we see the Scylla and Charybdis of local knowledge – the Scylla being that its space cannot be recognized as socially performed and it cannot be historically constructed if it is to be knowledge, with the Charybdis being that if it does not conform to (or overly complicates) traditional rules of intellectual property, then it will be ignored or worked around. So it can only be knowledge at the price of denying its very nature.

Writing and Reading the Archive

What gets stocked in our memory as a society? I will take this as the question of what is in our Archive. An intuitive rendering is that disciplines in universities get to remember what counts as knowledge – and that they do a pretty good job of it. In physics, you don't discover that you can split the atom and then have the next generation forget the discovery – though there are a number of less extreme cases that make scientific memory less than perfect. Historians get to remember what is important about the social and material past, anthropologists what is important about other societies and so forth.

Thomas Richards (Richards 1996) refers to our proliferation of records over the past few centuries as the 'imperial archive'. He tells a lovely story of the non-match between the record keeper and the local in this tale of the buddhists and the mapmakers. Captain Montgomerie's men have been refused access to Tibet. They notice that buddhist monks can cross the border freely, and so disguise themselves:

Robes were lined with secret pockets, compasses were fitted inside the top knobs of spiked pilgrims' staffs (which also served as makeshift tripods), thermometers were concealed in hollowed-out staves, extra mercury (used for setting an artificial horizon while taking sextant readings) was sealed in a cowrie shell and

² Here I am drawing on the work of Cori Hayden.

poured into a pilgrim's bowl wherever needed, sextants were squirreled away in false-bottomed chests... .

Unlike James Bond, who foils his adversaries with the help of various high-tech devices, Montgomerie became one of the first imperialists to adapt local practices to produce knowledge of a locale. With much effort he trained his recruits to walk up, down, or on the level at a set pace. He also taught them to count the number of paces they took in a day, and to keep count by using a Buddhist rosary. A rosary did not have to be hidden, but to simplify matters Montgomerie had special rosaries built with 100 rather than the customary 108 beads so that they could be used as decimal abacuses. The average monk stride turned out to be 33 inches. Every hundredth pace a monk slipped a bead. Every complete circuit of the rosary meant ten thousand paces, or five miles.

Montgomerie's first map merely showed a single zigzagging across empty space, but it also constructed a new political regime of knowledge, able, as he reported to his superiors, to 'give us an intelligible idea as to the whole of Eastern Turkistan.'

(18)

A huge amount of energy and resourcefulness has gone into the construction of the imperial archive. This story gives a canonical form of record-keeping – commandeering and adapting the local rather than listening to and understanding it.

Because there is so much record keeping going on all around us – and because that record keeping is so constitutive of our very selves – it is very difficult to take a step back and ask what the general features of the archive are. However, our Archive has some features which are central to understanding the places of local knowledge, so the game is worth the candle. Let us start with a thinkpiece in Science (the name of the journal itself is so redolent of authority) about tribal knowledge, written by Paul Alan Cox from the National Tropical Botanical Garden in Hawai'i (Cox 2002). The paper begins thusly:

As we begin a new millennium and contemplate how our current understandings might be evaluated in 1000 years, it may be useful to look backward. What pieces of knowledge do we treasure that come from 1000 years ago? Accounts from the end of the last millennium herald innovations like the metal plow but were imbued with folk knowledge from an era when trolls, fairies, and personifications of the elements, such as Jack Frost, were thought to play important roles in determining the course of human life.

The text conjures images of meetings of the learned Jack Frost Society in 999AD, perhaps at Averbury, and makes the metal plow guilty of being a tainted discovery by association with the fanatical followers of Jack. The move is clear – what needs to be saved is not what the Frost movement in its silliness, but the plow which emerged from/around it. What needs to be saved is what *we* think is knowledge and technology, not what *they* think. The paper goes on to develop the logic that both nature and indigenous culture are heavily under threat (an undoubted truth) and to dramatise the race to archive as follows:

College courses and international conferences in ethnobotany are multiplying throughout the world, yet at this crescendo of enthusiasm, an increasing number of aged healers are dying, with their knowledge left unrecorded.

Here exactly the same move is being made culturally with respect to the healers as is often made biologically with respect to dying species – we need to ‘bank’ their knowledge in our archive. If we can bank genetic sequences, then we can recreate animals and plants at will. If we can store indigenous knowledge in our databases, then we can evoke the ancient healers if needed – and current generations of plants and people can happily die without leaving any other trace, knowing that they are safely stored away in our databases.

All archives need a temporality - to carry on philosophical and scientific commerce, we have historically needed to agree on units of measurement of time, space and process (Pynchon). To talk to each other (or *a fortiori* to work in parallel) two computers often need to share a common clock – my own gets its time from the atomic clock server in Denver, Colorado so that it can communicate effectively with some boxes in Champaign, Illinois. Rather less precisely, geologists need to fix their epochs in order to be able to translate results from one corner of the earth to the other. Further, they have had, historically, to negotiate the kinds of package that time comes bundled in – is time basically a formless line or does it have a shape, so that our planet was once young and thrusting but is now middle-aged and flat... ? When I swap stories with my colleagues in the university, I know that there are various well-accepted patterns to time – a current obsession amongst many of my kind is the ever-receding (never proven) Golden Age when universities were universities and there was no need to be constantly on the make as one produced theories. Although these seem like heterogeneous examples, I do not see much in principle difference between them: in order to carry out effective communication, we need to be able to share units and shapes of time.

A common time subtends this structure of record keeping, rendering it useful through permitting the collocation of accounts of said events. Scientists make (im)mutable mobiles (Latour 1987). Let us refer to this structure of record keeping as the archive. ‘Arkhe’, Derrida notes:

names at once the *commencement* and the *commandment*. This name apparently coordinates two principles in one: the principle according to nature or history, *there* where things *commence* – physical, historical or ontological principle – but also the principle according to the law, *there* where men and gods *command*, *there* where authority, social order are exercised, *in this place* from which order is given (Derrida 1996: 1)

He names these two orders sequential and jussive; and asserts that from this point on (from the inception of the arkhe): “a series of cleavages will incessantly divide every atom of our lexicon”.

For any archive, in the beginning is the inaugural act: the moment from which memory is assumed to be perfect and time to begin. In his exploration of the history of writing, Clanchy tells us quite bluntly that the ‘fixed limit’ of the validity of written agreements of 3 September, 1189: “which continued for the rest of the Middle Ages, marked the formal beginning of the era of artificial memory”. (Clanchy 1979: 123). He has told a complex

story in three times – firstly it came to be recognized in England that written documents could be trusted as well as printed one, secondly it came to be recognized that one had not only to generate documents but also to store them in an archive, and thirdly it was seen that techniques of reference access to the library were needed in order to render them useful. For there was, he points out, no great reason to think that the written record should be preferred over the memory of trusted witnesses. What we would call forgeries, could be conceived as documents written to justify the ways of God to men... (Clanchy 1979: 148). Patrick Geary, telling a similar story over a different time period in France, argues that what happens with the development of a written memory was the supplanting of the role of women as memory keepers by men in monasteries (Geary 1994). He argues for a similar inaugural act – the keeping of written memories was part of a move to consolidate new power relations by partly by creating false continuities and discontinuities with the past:

Arnold of St. Emmeram compared the process of sorting through the past to the process of clearing the arable, cutting down groves once sacred to the gods so that the land could be made useful for the present. This same pruning was going on in archives across the continent. Both he and Paul of St. Père de Chartres emphasized that not everything was to be preserved, only that which was useful. (Geary 1994: 114)

Geary points out that future generations of historians have been held to the documents produced by this inaugural act of winnowing and fashioning, and so have tended to see the first millennium as a more radical break with the past than it probably was.

Each major change of storage medium over the past several centuries has engendered proclamation of similar inaugural acts. Charles Babbage proclaimed that until the invention of printing: "the mass of mankind were in many respects almost the creatures of instinct". Now, the great were encouraged to write, knowing that: "they may accelerate the approaching dawn of that day which shall pour a flood of light over the darkened intellects of their thankless countrymen", seeking: "that higher homage, alike independent of space and time, which their memory shall for ever receive from the good and the gifted of all countries and all ages". Since printing, the rate of progress of humanity has "vastly accelerated"; over the past three or four centuries "man, considered as a species, has commenced the development of his intellectual faculties" (Babbage 1837). There are more than enough kinds of time here to keep the landlord happy. There is the inauguration, which we today would put at 1453, of the era of intelligence for the mass of mankind. There is acceleration (things moving fast) and timelessness (homage being outside of space and time). In print mediated communication, this latter timelessness has often been seen as a central feature – marked, for example, by Landor's imaginary conversations (Landor 1824), which juxtaposed quotes from the great and wordy in such a way as to form fluent conversations across time and space.

We are perhaps not quite at the point of witnessing the inaugural act for the archive of computer mediated communication, but its prophets are many. One relatively sober form comes from Avi Silberschatz:

There is now effectively one worldwide telephone system and one worldwide computer network. Visionaries in the field of computer networks speak of a

single world-wide file system. Likewise, we should now begin to contemplate the existence of a single, worldwide database system from which users can obtain information on any topic covered by data made available by purveyors, and on which business can be transacted in a uniform way. (Avi Silberschatz 1994: 929)

Computer scientists have frequently announced the dawning of a new age. Thus Pierre Auger declaimed: “Now, after the age of materials and stuff, after the age of energy, we have begun to live the age of form” (Auger 1960). The old age, he argued, was one of diachrony and materialism: it gave us the historicist visions of Darwin and Marx. This age, he argued, is that of synchrony and form. When such an epistemic break is operated, the knowledge of the previous age becomes irrelevant; when the break is constituted by the move from diachrony to synchrony, the past is doubly deleted. There are many analogous inaugural acts for perfect memory systems woven into the fabric of our history. Lavoisier’s chemistry textbook inaugurates the modern era of chemistry by forging discontinuities with past chemistry (changing the names of substances to remove relationships with alchemy; not mentioning continuities with previous work (Bensaude-Vincent 1989). Lyell’s Principles of Geology does much the same – attaching a catastrophic time (schools of thought erupting onto the landscape but then going nowhere) to prior geology and a uniformitarian time to his own (Lyell 1832). The rhetoric goes that there is nothing worth remembering from chemistry or geology beyond these inaugural acts; but that after these acts each chemical or geological contribution will be remembered time out of mind.

For Derrida, the archive is not only sequential back to an origin, it is also jussive. It tells us what we can and cannot say: “The archive is first the law of what can be said, the system that governs the appearance of statements as unique events” (Foucault 1982: 129). My reading of these claims is not particularly derridean or foucauldian. The jussive nature of the archive comes down to the question of what can and cannot be remembered. The archive, by remembering all and only a certain set of facts/discoveries/observations consistently and actively engages in the forgetting of other sets. This exclusionary principle is, I argue, the source of the archive’s jussive power.

A trinity of examples will indicate the nature of my claim. Ian Hunter (Hunter 1988) wrote an article called ‘Setting Limits to Culture’ in which he argued that the academic field of cultural studies has tended to fall into an aesthico-ethical reading of culture, even when it was avowedly materialist. He noted that administrative change of the type carried out by Kay-Shuttleworth in the mid-nineteenth century (he was a leading advocate of universal education) tends to get written out of the cultural histories – even though his work had a lot more to do with the founding of the state, say, than the arguments held by political economists. Hunter asks:

Why then are we predisposed to ascribe thinkers like Engels and his more famous partner – or, for that matter, prophets of culture like William Morris or Matthew Arnold – central roles in the process of cultural development, and to consign administrative intellectuals like Kay-Shuttleworth to the relative obscurity of educational history? (Hunter 1988: 105)

His response is that on the whole, academic attempts to look at the forging of organizations and the framing of cultural attributes are carried out: “in the shadow of a

single general process of contradiction, mediation and overcoming at whose end lies the 'fully developed' human being" (Hunter 1988: 106). Putting this in a completely different way, the memory of infrastructural change is not held overtly – if it is held at all, it is held in the most abstract forms furthest away from it (in the form of a memory of intellectual manifestoes epiphenomenal to the infrastructural change). Mary Douglas describes the consistent institutional forgetting by the discipline of psychology of a number of independent discoveries of the social or collective nature of individual attitudes. Following Donald Campbell, she asserts that:

it is professionally impossible in psychology to establish the notion that institutional constraints can be beneficial to the individual. The notion can be scouted, but it cannot enter the memorable corpus of facts (Douglas 1986: 83).

She goes on to note that, ironically but naturally, Campbell forgot his own insight and turned to biological determinants... . Douglas claims that this eminent forgettability is due to the discovery not fitting in with the institutional commitment to individualistic methodologies – there was no place for the facts to be pigeon-holed. Finally, Yrjö Engeström points to the difficulty that ethnography has in examining the concept of memory: since in general ethnographies deal in very thin time slices, but memory is accreted over months, years, generations (Engeström 1990a); equally ecological studies have often been limited by the career span of the ecologist, who finds it difficult to further a career with a one hundred year experiment, say (LTER issue of sciencexxx).

Hunter and Douglas point to a somewhat idealized feature of the jussive nature of the archive: the fact that what ought to be remembered is all and only that which fits in with the worldview legitimated by the inaugural act. Typically, Engeström is somewhat more mundane – he tells us how this forgetting or overlooking can take place in practice. He notes that the archive contains a set of methodological rules for the accretion of facts and theories, and that certain kinds of facts and theories just cannot fit. The edict (thou shalt not write about social memory) is translated into a fact about the world (there is no way in which such and such a kind of data can be gathered). The archive's jussive force, then, operates through being invisibly exclusionary. The invisibility is an important feature here: the archive presents itself as being the set of all possible statements, rather than the law of what can be said.

But as I write this, I am aware of the hypostatization that is going on here. There is of course no single Archive; we as a society operate multiple sets, far more heterogeneous than functionalists like Douglas could ever see from behind the walls of their archive. I do want to talk about it in the singular in this instance because I am trying to describe features common over the set of archives that we construct. And I do believe that there are sets of dependencies between archives that lead to regularities among the exclusions (and commonalities among the inaugural acts). This is a degree zero of the Archive. Patrick Tort's study of the rise of genetic classification systems in the nineteenth century demonstrates how there has been a filiation between archival principals operating across a wide range of fields – he traces links between the fields of the classification of writing, linguistic typologies, race classifications and criminal physiognomy for example (Tort 1989).

It would seem a terrible pity if indigenous knowledge survived in the Archive in the form that it would have to take in order to be storable (acceptable temporality, spatiality and ontology). Further, in order to be made storable, it would have to lose its setting. The situation between the World and the Archive is parallel. The cassowary that is banked as genetic information to be recreated at will at a future date will emerge from its matrix without sets of cues for good living that cassowaries have inscribed into their environments over the past several millennia. It won't have anyone, apart from a human with access to the Archive, to tell it how to be a good and happy cassowary. Similarly, the indigenous knowledge being stored for future possible retrieval as the healers die will be acontextual, dead.

So why keep knowledge local and local knowledge?

Well the first answer is that it is anyway. All knowledge, as pointed out above, is irredeemably local. Howard Becker (personal communication) has a nice mantra for the state of scientific knowledge: "We used to believe, but now we know...". The astonishing thing – at any level of temporal granularity – is that so many think that our most cherished notions are established for all time. Now we know. It is a terrible hubris to say that one has access to the only way of knowing. We ourselves – whoever that may be – have several, contradictory, very powerful ways of knowing. Attention beyond reason to a single way of knowing is attending to a fetish that demands obsessive concentration, not going the one, true, right and only way.

More substantively, I could perhaps call to mind the beautiful lines in Leibnitz's Writings on China about the difference between Chinese and European knowing. He argues that where the West has mathematical and logical knowledge down, the East undertands the Art of Society. This resonates with much current Vulgate about the Other – they know how to live. However, he also hails as one of the greatest discoveries of all time the invention of binary notation – which he discovered through the *I Ching* and its hexagrams. The powers of binary arithmetic are not to be denied in the computer age. Crucially, however, the argument can be made that the binary has become a tool for thinking with in our culture, as it was in China. One has only to look at the binary oppositions of the structuralists to see its penetration into anthropological and philosophical discourse in the 1980s... . If we can say that we have learned a tool for thinking with, rather than wrested a nugget from a blank slate, then we can say that we are listening forth to all knowledge.

Conclusion

In this image of the North Balranald Region, Aboriginal artist Tracey Andrews has traced images of the 'dreamtime' (the aboriginal sacred space which is both physical environment and home of the ancestors) onto a Landsat image of the region. For me, Andrews' work speaks to the problem of knowledge in the university. Knowledge which matters has to be knowledge which is open to its own historicity and spatiality, and open to alternative ontologies. In this age of renewed fundamentalisms of all stripes – religious and scientific – the crucial task for the University is to provide a playground. In classic liberal discourse, this is a neutral playground – free of ideology, will and power. In the nineteenth century, laissez faire economics was supported by Britain, the dominant imperial power, since a 'fair' economic arena with no government intervention would favor them every time. Similarly, 'fair' admission of all forms of knowledge to the playground constructed by Western science guarantees victory for the dominant ideology of science. I believe that our task now is to challenge the imperializing vision of the neutral playground governed by rational choice. We must create spaces in which the rules of the playground are visible and negotiable, and wherein myriad ways of seeing, reading and knowing can bloom.



North Balranald Region Peta-Oriented Image
Landsat 7 ETM+ data acquired January 2000
Image size approximately 100 x 100 km, Resolution 250 metres
Map prepared by Environmental Research and Information Consortium Pty Ltd (ERIC)

ENVIRONMENTAL
RESEARCH
AND
INFORMATION
CONSORTIUM
Pty Ltd

Working with 'mapping possibilities' 2000 Tracey Andrews, Sydney

References:

- Auger, P. (1960). Introduction. Proceedings of the Second International Association for Cybernetics, Namur, 1958. Paris, Gauthier Villars.
- Avi Silberschatz, M. S., Jeff Ullman (1994). Database Systems: Achievements and Opportunities. Readings in Database Systems. M. Stonebraker. San Francisco, Morgan Kaufmann: 921-931.
- Babbage, C. (1837). The ninth Bridgewater treatise a fragment. London, J. Murray.
- Bensaude-Vincent, B. (1989). Lavoisier: Une Révolution Scientifique. Éléments d'Histoire des Sciences. M. Serres. Paris, Bordas: 363-386.
- Clanchy, M. T. (1979). From memory to written record, England, 1066-1307. Cambridge, Harvard University Press.
- Cox, P. A. (2002). "Will Tribal Knowledge Survive the Millennium." Science **287**: 44-45.
- Derrida, J. (1996). Archive fever : a Freudian impression. Chicago, University of Chicago Press.
- Douglas, M. (1986). How institutions think. Syracuse, N.Y., Syracuse University Press.
- Engestrom, Y. (1990a). Organizational Forgetting: an Activity-theoretical Perspective. Learning, Working and Imagining: Twelve Studies in Activity Theory. Y. Engestrom. Jyvaskylassa, Painettu KirjapainoOma Kyssa: 196-226.
- Foucault, M. (1982). The Archaeology of Knowledge. New York, Pantheon.
- Geary, P. J. (1994). Phantoms of remembrance : memory and oblivion at the end of the first millennium. Princeton, N.J., Princeton University Press.
- Hunter, I. (1988). "Setting Limits to Culture." New Formations **4**(Spring): 103-123.
- Landor, W. S. (1824). Imaginary conversations of literary men and statesmen. London,, Taylor and Hessey.
- Latour, B. (1987). Science in Action: How to Follow Scientists and Engineers Through Society. Milton Keynes, Open University Press.
- Lyell, C. (1832). Principles of geology. Lond., Murray.
- Richards, T. (1996). The Imperial Archive: Knowledge and the Fantasy of Empire. London, Verso.

Tort, P. (1989). La Raison Classificatoire: les Complexes Discursifs - Quinze Etudes.
Paris, Aubier.

Formatted: Indent: Left: 0 pt,
Hanging: 36 pt