

CARTOGRAPHY, ETHICS AND SOCIAL THEORY

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ABSTRACT 'Cartography, Ethics and Social Theory' is a sequel to 'Deconstructing the Map' (*Cartographica* 26 / 2, 1989: 1–20) and to the 'Responses' to that paper (see 'Commentary' *Cartographica* 26 / 3 & 4, 1989: 89–121). It is argued that the absence of a social dimension in cartographic theory has led to a neglect of social issues in the content of maps and that together these deficiencies constitute a crisis of representation. The dilemma of cartographic ethics – and the profession's response to it – is discussed in the context of the technological transformation in official topographical mapping being induced by the invention of Geographical Information Systems. A case is made for the retention of topographical maps in their present *published* form on the grounds that they can offer a democratic and humanistic form of geographical knowledge.

The golden light radiates from every point in the blue sky; it encircles the map-makers on the mountain-top and spreads over the dimpled, pocked, and folded earth, over hills unnamed, marked but nameless trails, villages too small to make the map where women peel carrots for soup and young girls drift idly from house to house paying their calls, letting the bushes slap against their hands as they walk.

MAYA SONENBERG *Cartographies*, 1989, p. 21

INTRODUCTION

Let me begin by explaining the title of this paper, 'Cartography, Ethics and Social Theory'. Everyone is aware nowadays of the threat – or challenge – to traditional cartography posed by computer-based technology. There has even been talk of a requiem for the paper map and we are told there is a "growing perception that visual maps are no longer necessary for many functions."¹ For older cartographers there has been a period of painful transition as even the notion of what a map is – leave alone how to make a map or whether visual maps should be preserved – has come to be questioned. This has given rise to technical tensions within cartography, but here I want to discuss the ethical failings in the way maps mediate between society and the world. As a crisis of representation, this is related both to cartography's theoretical isolationism behind disciplinary barriers and to its lack of social relevance in a practical sense. I shall introduce examples of these ethical issues in the first section of the essay.

In the second section, I intend to revisit some of the questions raised in 'Deconstructing the Map'² and in the eleven responses to that paper that were printed in *Cartographica*.³ Throughout the debate my intention has been to contribute to a theoretical framework within which a social history of cartography as a set of practices might be written. Yet it is also clear that some of the issues are relevant to contemporary theory and practice. In this context, though cartography is far more complex, our conceptual understanding is often polarized on a simplistic dichotomy between art and science. As a discourse created and received by human agents, maps represent the world through a veil of ideology, are fraught with internal tensions, provide classic examples of power-knowledge, and

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are always caught up in wider political contexts. Such an interpretation challenges the now time-warped claim of cartography⁴ to be a modern science, a symbol system complete with 'foundationalist' or 'essentialist' qualities of 'objectivity,' 'truth,' and 'reality.' The challenge is necessarily a deconstruction. Yet far from being the latest intellectual fad,⁵ the thrust of postmodern thought, involving shifts in sensibility and practices,⁶ does also speak constructively to a study of mapping. By discussing such ideas cartographers would be following a pathway already well trodden by other disciplines such as architecture and design as well as by philosophy, social theory, and literary studies. Such intellectual debates do more than occupy academics: they provoke self criticism. Postmodernism indeed cannot reasonably aim or pretend to sweep away all that is modern but it can contribute not only to a new richness in historical studies but also toward an enhanced social awareness that mapping must surely be "for people rather than for Man."⁷ In this essay I shall stress the latter aspect.

In the third part of the essay I will return to the reconsideration of topographic maps. It will be shown how cartographic theory and values are inseparable in these maps and how together they frame the ethical questions about what sort of maps we would like to see as we approach the end of the millennium. Fraser Taylor, in his comments on my paper asks if I have a 'hidden agenda.'⁸ No. It is not my own but a *public* agenda that seeks through an open debate to extend cartographic consciousness beyond a narrow concern with 'accuracy' or 'utility' as the sole ethical yardsticks. It will become clear that I believe that our discourse about maps, whether historical or modern, should be made more responsive to social issues such as those relating to the environment, poverty, or to the ways in which the rights and cultures of minorities are represented on maps.

A CARTOGRAPHIC ETHICS?

As Wolfgang Natter and Paul Jones III remind us the cartographer is actively engaged in the 'social construction of race and ethnicity' when he or she labels an area on maps as 'Chinatown' or 'Little Havana.'⁹ Yet these well-known examples of how names on maps structure consciousness are only the tip of the ethical iceberg. In North America, especially on older United States Geological Survey (USGS) maps, there are many examples of racially offensive names that have passed unchallenged into wider cartographic currency. From many different parts of the country names such as those in Table 1 can be uncovered.

From 1962 onward the U.S. Board on Geographic Names ruled that offensive names would no longer be allowed on official maps, and it determined that the word 'nigger' would be replaced with 'negro.'¹¹ This policy is the basis of the changes recorded in column 2 of Table 1, and it also led to the amendment of other derogatory place-name elements such as the 'Jap' names ('Jap Slough' is now 'Japanese Slough,' Arizona, 34°52'02"N, 114°33'49"W).

The cartographic complicity in this sort of racial stereotyping is by no means an issue belonging to the past. The 'Negro' names are probably less acceptable today than they were in the 1960s, but epithets applied to other ethnic groups still await revision. Thus we can encounter names on official maps such as 'Jew Point'

TABLE 1. EXAMPLES OF DEROGATORY NAMES WITH AFRO-AMERICAN EPITHETS ON USGS MAPS¹⁰

Original offensive name	Amended name	Location	
Niggerhead Creek	—————	Alaska	65°3'35"N, 150°04'00"W
Negro Tank	Ivie Tank	Arizona	35°28'11"N, 112°03'09"W
Nigger Canyon	Negro Canyon	Arizona	31°32'35"N, 111°02'30"W
Nigger Hill Church	Negro Hill Church	Arkansas	35°20'26"N, 94°19'08"W
Nigger Jack Slough	Jack Slough	California	39°09'31"N, 121°36'30"W
Negro Rube Creek Nigger Rube Creek	Rube Creek	California	34°53'55"N, 118°43'50"W
Nigger Hill	Barney Ford Hill	Colorado	39°28'20"N, 106°02'00"W
Nigger Canyon	Warring Canyon	California	34°24'56"N, 118°47'45"W

TABLE 2. EXAMPLES OF DEROGATORY NAMES WITH AMERINDIAN EPITHETS

Name on current usgs maps	Location	
Squaw Pants Crossing	Alaska	64°26'12"N, 149°04'20"W
Squaw Hump	Idaho	47°07'21"N, 116°50'31"W
Squaw Teats	Montana	45°49'29"N, 109°40'38"W
Squaw Nipple	Montana	45°58'59"N, 108°18'10"W
Squaw Tit	Montana	45°54'13"N, 110°33'36"W
Squaw-Humper Creek (variant Squaw Creek)	South Dakota	43°36'43"N, 102°58'49"W

(Florida, 25°17'10"N, 80°19'44"W), Wandering Jew Group (Arizona, 31°37'23"N, 110°51'53"W), or place names with Hispanic connotations such as 'Dago Gulch' (Oregon, 43°17'38"N, 117°15'15"W), 'Dago Joe Spring' (Nevada, 37°43'10"N, 117°19'18"W), and 'Gringo Gulch' (Arizona, 31°33'59"N, 110°46'30"W). As Table 2 shows, although the U.S. Board on Geographic Names now issues instructions for the *Field Investigation of Native American Placenames*,¹² names that are derogatory to Indian groups are still a feature of official maps.

This simple table is an object lesson in the microphysics of cartographic power. But if it helps us to unmask the innocence of the mapmaker's project, it also

reminds us of the complexity of power-knowledge and of its reception in society. The naming process was not entirely a history of naked imposition, nor of passive acceptance, nor yet of subsequent unified resistance to these offensive 'speech acts' on the map. The choice of names, as far as we know, was not a deliberate or malicious act on the part of Federal surveyors who may have believed that their job was to interfere as little as possible with the use of names in everyday language. Much like the anthropologists, the mapmakers, working in a colonial context, were merely 'collecting culture.' Yet this comfortable doctrine ignores the compounding effect of mapping and of publication. To map the name was to give its prejudice an anonymous legibility. To publish the name was not only to make it permanent but also to give it authority and legitimacy as a coordinate on a Federal map. Through a succession of such acts, at the time disconnected, 'Nigger' and 'Squaw' were reinforced as part of the natural order of the world.

Confronted with this ethical issue, cartographers at large might argue that the problem is being taken care of by the U.S. Board on Geographic Names and that it is 'none of their responsibility.' This is true only of names on official maps. Derogatory names have been reproduced on many other derived maps so that they have become a matter of State as well as Federal politics. In New York "place names constituting racial, ethnic, or religious" slurs were outlawed in 1988.¹³ In Texas, however, where maps identifying 'Nigger Creek,' etc. are still in use, the issue is still a racist legacy for the 1990s,¹⁴ as will be shown below.

Nor is the problem confined only to the elimination of derogatory names. There is also the issue of restoring to the map – as an act of social justice – the place names of former colonized peoples who now form the ethnic minorities of modern societies. In New Zealand it is now agreed policy that

Official map-making ... will need to recognise the rights and requirements of users of both official languages – English and Maori. Equity demands the revaluation of Maori as a living language rather than as an historical curiosity.¹⁵

In Canada the process of restoring Inuit names to the maps of the Arctic regions has become a symbol of 'the decline of the imperial idea.'¹⁶ What about the United States? Apart from attempts to restore Indian names on an experimental basis little systematic renaming seems to have been accomplished.¹⁷

We are left with the question of how often do *cartographers* participate, let alone take a lead in these ethico-political matters? Buried in the anxiety to provide an ever more sophisticated technology, more often than not they are passive reactors rather than active initiators. In a year when rednecks are protesting about Indian Treaty rights on the boat landings of northern Wisconsin, where are the liberal mapmakers in the State Cartographer's Office in Madison? If I should be lobbying my State legislator, then perhaps they should be debating whether to restore more of the Indian names on the maps of the State, how to better represent Indian archaeology in the Midwest landscape, or how to remove forever from the toponymic register a settlement name such as Victory in Wisconsin (with its connotations of celebration – and thereby legitimation – of an Indian massacre by settlers)?

As well as a commitment to social equity a greater flexibility in national mapping programs is called for. The bureaucratization of cartography has led to homogenization of the map. For areas of continental size the imposition of a standard specification is too monolithic. I am reminded of the words of Barry Lopez in *Arctic Dreams* who observes of this modern age, the best mapped of any age, that as a traveller, he “immediately confronts the problem of the map, an organization of the land according to a certain sense of space and an evaluation of what is important.”¹⁸ For Lopez, the map only “masquerades as an authority.”¹⁹ Moreover, if

To a modern traveler the arctic landscape can seem numbingly monotonous ... this impression is gained largely ... from staring at empty maps of the region and from traveling around in it by airplane. The airplane, like the map, creates a false sense of space.²⁰

Much the same could be said about topographical maps as interpreters and mediators of the environment or poverty. Rather than registering any cause for environmental concern they appear to offer “a scientific guarantee of innocuousness.”²¹ Yet as Geoffrey Taylor, the English journalist suggests, “Why not a map showing the places to avoid?” He writes

So what I am proposing is a map of England ... which shows the eyesores to be avoided as well as the attractions to be observed. The Ordnance Survey has conventional signs for wildlife parks, nature trails, viewpoints, youth hostels, historic houses, and gardens open to the public. Why does it not carry warnings against lanes filled with juggernauts or quarries out in the back of beyond which glow all night like a fully-dressed ocean liner?²²

There are two very serious points here. The first is that it is left to outsiders to place that which we silence on a cartographic agenda. The second is the lack of information on standard maps with which to make informed decisions. Environmentalists in the United States, for instance, at a time when acid rain or commercial destruction is threatening our forests, may be frustrated by the optical illusion of a topographical map that shows woodland only by an undifferentiated green tint to define its area. They would be further perplexed by an official definition of woodland, still current in the 1980s, as an area

containing tree cover or brush that is potential tree cover. The growth must be at least 6 feet (2m) tall and dense enough to afford cover for troops.²³

This is a relic not of the Cold War but of the Civil War. As I drive through Wisconsin I keep my eyes peeled for infantrymen, each platoon leader carrying a map, seeking with difficulty to guide his men through the forest.

City dwellers will likewise look in vain for a glimpse of the social crises beneath the monotonous tints for urban cartography. Such maps, which are not at the human scale, speak neither of the quality of buildings nor of human life. It was a journalist who drew attention to the silence of the cartographer’s city. Thus to

James Brooke, writing for *The New York Times* from Rio de Janeiro, the map was threadbare:

A tour of Rio's India starts where the maps end ... Airbrushed out of the minds of the affluent, most favelas do not appear on city maps. Indeed, many maps paint Santa Marta pastel green, implying perhaps that the hill, home to 10,000 poor people, is park.²⁴

If we care about raising consciousness – as a prelude to political action – then we need to face up to the conclusion that maps are often inadequate as a way of seeing. 'Remote' sensing may have a social implication that the coiners of that technological term did not dream of. The cartographer's categories – as expressed through conventional signs – are the basis of the morality of the map; they are the framework of cartographic ethics. When we make a map it is not only a metonymic substitution but also an ethical statement about the world. How can mapmakers be complacent about a situation in which the world begins where the maps end? This is a political issue. As Denis Wood puts it

We will not be able to make intelligent *choices* until, having accepted our political instrumentality, we fully debate our situation with this in mind. There will materialize Cartographers for Peace and Cartographers for a Strong Defence, but at least we will be through with pretending we are not completely involved.²⁵

But as well as carrying political implications, such ethical questions are also an integral part of the humanities. Do we care enough to assume responsibility for the social consequences of our own intellectual practices? As Richard Helgerson reminds us even our actions as scholars "do other things in other worlds – and some of the things they do might not much please us if we knew about them."²⁶

A RESPONSE TO THE CRITICS

For there to be a socially relevant cartography – the history of cartography is included here because I believe we must radicalize the past to understand the present – there has to be a place in cartographic theory for interpretations that embrace a social dimension. We need to recognize unequivocally that the map is a socially constituted image and our definition of the artifact itself should reflect that recognition. This is entirely lacking in works such as Robinson and Petchenik's *The Nature of Maps* or Keates' *Understanding Maps*²⁷ and in the voluminous literature on cartographic communication and cognition. They represent a still largely positivist way of cartographic thinking.

What is surprising is not that we are these days talking about deconstruction but that there has not been an earlier challenge to the cartographer's project with its ethos of scientific detachment. The 'postmodern condition' is not new: it was extensively debated throughout the 1980s.²⁸ We may learn something from architecture. With its combination of theory and practice, architecture exhibits important historical parallels to cartography. We can trace a similar collusion between praxis and the use of geometry and number, similar tensions between the

demands of an artificially dichotomized art and science, and a similar functionalization of theory. What we have increasingly seen in cartography, as much as in architecture, is the transformation of theory “into a set of operational rules, into a tool of an exclusively technological character.”²⁹ Yet the difference is that architects are less reluctant than cartographers to debate their ontological status. So Alberto Pérez-Gómez, in *Architecture and the Crisis of Modern Science*, is able to write about the absence of social reality in contemporary theory:

The poetical content of reality, the a priori of the world, which is the ultimate frame of reference for any truly meaningful architecture, is hidden beneath a thick layer of formal explanations. Because positivistic thought has made it a point to exclude mystery and poetry, contemporary man lives with the illusion of the infinite power of reason. ... For many architects, myth and poetry are generally considered synonymous with dreams and lunacy, while reality is deemed equivalent to prosaic scientific theories ... Mathematical logic has been substituted for metaphor as a model of thought. Art can be beautiful, of course, but only seldom is it understood as a profound form of knowledge, as a genuine, intersubjective interpretation of reality. And architecture, particularly, must never partake of the alleged escapism of the other fine arts; it has to be, before anything else, a paradigm of efficient and economical construction.³⁰

I ask you to substitute cartography / cartographer for architecture / architect in this passage.

As I leaf through some of the cartographic journals, it becomes clear that in the computer age the traditionally ‘objective’ standpoint of cartography is being further functionalized. While there are exceptions, it is predominantly ‘a paradigm of efficient and economical construction.’ Eavesdropping in the conference bar, the cartographer’s chatter is of the virtuoso Macintosh rather than the question of why or what we map. Are the mechanics of the new technology so preoccupying that cartographers have lost interest in the *meaning* of what they represent? And in its social consequences? And in the evidence that maps themselves can be said to embody a social structure?³¹ If material efficiency is allowed to dominate the design and construction of maps, we can see why the ethical issues tend to pass unnoticed. The technology of Geographic Information Systems (GIS) becomes the message, not just the new *form* or medium of our knowledge. The crisis of representation is now the crisis of the machine. This is not the first time this has happened in the history of cartography. As Roger Chartier puts it, form produces meaning: “Both the manipulation of the reader and the appropriation of a text’s meaning always depend on its material forms, which are invested with an ‘expressive Function.’”³² At present it is one material form – the all persuasive technology – that is increasingly dominating the discourse of cartography.

With this in mind perhaps the greatest danger to cartography is its continued intellectual isolation. Cartographic theory is not a specialized subject existing in hermetic isolation. Certainly – as some of the *Cartographica* ‘Responses’ indicate – other disciplines in the broader semiotic arena are also doubting the truth claims of their local knowledge. Robert Baldwin (Art History), Richard Helgerson (English), Christian Jacob (Classics), Walter Mignolo (Romance Languages), and

Wolfgang Natter and Paul Jones III (German and Geography)³³ all point to the key issue as the substitution of a theory that accepts the rhetorical, political, and temporal nature of maps for one of a transparent mode of signification that has hitherto dominated cartographic thought. It would be naive to think that either a traditional map or the latest Geographic Information System will ever approach a unity of signifier and signified, or that it will deliver a disinterested description disengaged from the ideological context of the world at large. Of course, all maps proclaim their complicity with the material order. And all Geographic Information Systems will contain an element of rhetoric. As the intellectual historian Dominick La Capra put it,

'Scientificity' is itself a self-denying quest for a certain rhetoric, a rhetoric unadorned by figures, unmoved by emotion, unclouded by images, and universalistic in its conceptual or mathematical scope.³⁴

The problem is to get cartographers to see their place in these ambivalent acts of communication. One measure of how far they are interested in coming to terms with their own rhetorical transparency will lie in their response to the present debate. I applaud the willingness of Fraser Taylor as ICA President to talk. His final suggestion, however, that a strongly argued case is likely to "have negative rather than positive results"³⁵ is discouraging. Is it to be taken as a signal of the closing of the cartographic mind, the creation of a conspiracy of silence, in the face of the discomfiting notion that some of its claims to rigor may be unjustified?

As far as the history of maps is concerned (my standpoint), the ontological exploration is also an epistemological critique. It leads to questions: what is the nature, and what are the grounds, the limits, and the criteria by which we write and we judge the writing of cartographic history? Elsewhere David Woodward and I have argued that we need to become more self conscious about the historical tradition of which we are part.³⁶ It may now be stressed, though, that in achieving these ends, links with postmodern scholarship do not entail a retreat from critical standards nor a substitution of superficiality for depth. Indeed, an engagement with postmodernist thinking can only equip us to unmask the very duplicity of text that Fraser Taylor refers to in the work of Jorge Luis Borges.³⁷ The point I am making is that the act of deconstruction is a way of avoiding the myths that sometimes drive cartographic history. Thus a leading American cartographer, belonging to the 'Never Doubt it's Science' school of thinking, writes in a Preface to an officially sponsored ICA publication, *Cartographical Innovations*, that "cartography now has an indispensable addition to its long and glorious history."³⁸ We can glimpse here the unconscious process of myth-making, through which the invention of a progressive positivist past is used to justify a progressive positivist present.³⁹

In the responses to my paper a number of suggestions were made as to how we might write a different sort of history of cartography. Michael Blakemore writes that "there may indeed be a case for more biography ... Too much of the history of cartography is sanitized by the removal of personality and motive."⁴⁰ Certainly it is not my intention to banish cartographers or their institutional

contexts from the process of mapping,⁴¹ and I agree with him that we need to know far more about the 'extra-scientific' factors that have contributed to the development of cartography and recently GIS as a discipline. In the words of one philosopher of science such factors include "the political infighting, the name-calling, the parody and ridicule, the arrogance, elitism, and raw use of power."⁴² But at the same time, there are dangers in merely compiling 'interesting biographies' or oral reminiscences from grand old cartographers that could result more in canonization than criticism.⁴³ Any self-respecting history must systematically embrace the structures or contexts within which individuals acted to produce their maps. This 'contextualization of representation' is a thread that runs through a wide spectrum of historical scholarship. For instance, iconology seeks to place the image or text into the matrix of thought of the society that created it;⁴⁴ realism, as understood by historians of science, assumes that there are unseen forces that both influence, and are influenced by, the actions of individuals;⁴⁵ structuration theory is concerned with reciprocal interaction of agents and structures in society;⁴⁶ and hermeneutics pursues the meaning of texts within a wider context of conventions and assumption.⁴⁷ To cite these is not an attempt to obfuscate the argument with yet more arcane theories but to reinforce the point that there is *already* a territory of common ground extending across disciplines. All sorts of scholars with seemingly different philosophical perspectives are converging on the view that knowledge is

a social product, a matter of dialogue between different versions of the world, including different ... ideologies, and modes of representations. The notion that there is 'a' scientific method so flexible and capacious that it can contain all these differences and adjudicate among them is a handy ideology for the scientist ... committed to the authority of science, but it seems mistaken in theory and practice.⁴⁸

My worry is that while other disciplines are broadening their perspectives, developments in cartography have tended to narrow them, at least until very recently.⁴⁹ International practice in this respect is varied but cartography is often defined to exclude the processes of data collection in mapmaking, such as land and hydrographic surveying, aerial photography, and, most recently, remote sensing.⁵⁰ In a widely used textbook in the United States cartography is defined as "any activity in which the presentation and use of maps is a matter of basic concern"⁵¹ but other texts suggest a yet narrower focus with design and production of thematic maps gaining ground in the academic curriculum at the expense of other types of maps including the products of national survey organizations.⁵² Cartography has lost its hold on the lived-in world. Matthew Edney is thus right to observe that surveying – or indeed other agents of information gathering – cannot be excluded either from cartographic history or from the study of contemporary mapping.⁵³ Looking back over developments since the 1960s, it is clear that it is this divorce between the social relevance of map content and the technology of map-making that underlies the present crisis of representation in cartography and the history of cartography. The shift of focus in cartography, almost exclusively to the technical side, may in part have been a practical necessity – a

matter of survival – but it also reflected a conscious political strategy. Cartography was to acquire the status of a sub-science. Yet, it is arguable that the search for institutional power lost, rather than gained, status for cartography in the scientific community. How many other ‘sciences’ are merely manipulators and generalizers of other people’s data? The severing of links with the world one purports to represent is no less than abdication, intellectual as well as ethical. The adoption of new technologies can perhaps reverse the trend by restoring some links between the ‘real’ world and the image but it has to be recognized that the hard decisions about social content have already been made long before the substance of the map arrives in the cartographer’s office. Whether the end product is a draft map or a digital tape, the power game over just what is to be privileged in the world is already largely over for the cartographer.

In the ‘Responses’ to ‘Deconstruction’ my fiercest critic is Anne Godlewska.⁵⁴ She poses rather starkly the question whether we should be bothered with competing social theories at all. There are undoubtedly some dyed-in-the-wool cartographers who breathed a sigh of relief to discover their prejudices against all that is seen as esoteric, subversive, or anarchistic championed in such a punchy way. But I am puzzled. While Anne Godlewska spares some theories, she saves her rod for “the insight and vocabulary of literary criticism.”⁵⁵ She might have borrowed the words of a distinguished historian to express her fear that

literature has returned to history, unfurling her circus silks of metaphor and allegory, misprision and aporia, trace and sign, demanding that historians accept her mocking presence right at the heart of what they once insisted was their own autonomous and truly scientific discipline.⁵⁶

In the event, she herself has made a choice not between ‘surfing and swimming’ but between competing ideologies – just as I have done! Her concern seems to be with the balance between theoretical and empirical endeavor, and she has come down in favor of the latter. She asks us to continue to place our trust in a documentary model of knowledge in which the basis of research is what is supposed to be ‘hard fact,’ data derived from a critical shifting of the sources.⁵⁷ It is an old argument. By sticking close to the sources the result is supposed to be somehow more theory-neutral or a more objective form of historical reconstruction. There are two objections to this stance. One is that new light is not derived only from the exhumation of ‘original’ archival sources. ‘Evidence’ does not in itself yield knowledge: it answers questions, and in their formulation questions are subjective (to one degree or another). The other is that new knowledge does not have to derive from discovery of new sources or a reexamination of old sources. Reinterpretation or revision of old-established theories has also been shown to transform our understanding of the world. Anne Godlewska probably accepts this argument, so we are left with her particular objection to postmodernism, an objection that may reflect not only a blindness to her own rhetoric but also demonstrates nicely the very cultural intolerance (“historians of cartography ... do not read, neither do they question”),⁵⁸ that she herself criticizes.

By looking around at contemporary intellectual issues, postmodernism in-

cluded, the aim is not to find a single, totalizing theory nor a practical 'cookbook' for historical inquiry. The aim is to broaden our viewpoint and our experience as a means to an end, arriving at an understanding of the unspoken 'rules' of cartographic discourse – the 'language games' associated with maps⁵⁹ – and thus at a point at which we can begin to apprehend their meaning. As a matter of fact, for cartography and the history of cartography, these meanings are not as undecidable as some deconstructionist writings claim. We can go much further than Maurice Zapp, the character in David Lodge's novel, for whom "The Text [merely] unveils itself before us, but never allows itself to be possessed; and instead of striving to possess it we should take pleasure in its teasing."⁶⁰ The postmodernists' argument is that all knowledge is local or relative, and that there can be no single 'true' reading of any map. However, for the cartographer and the historian of cartography, their *tactics* (as opposed to their conclusions) may lead the way to a different kind of intimacy with the image, as in my study of silences or of the rehabilitation of marginal decoration to the center of the map. Interaction between history and critical theory is thus an encouragement to learn to detect, or 'read' the conflicting values in maps. The consequences of our new insight is a certain amount of discomfort about the ethical basis of our representation.

Much more fundamental criticisms, it seems to me, to my agenda of deconstruction come from the responses of Robert Baldwin and Richard Helgerson. Their argument expresses in other ways what we may hope to gain by exploring various theoretical positions. Thus Robert Baldwin commented that I

might have concluded by admitting the chasm between his ultimately positivistic, carefully historical reconstruction of maps as political, social, and economic documents and the deconstructionist belief in the hopeless ambiguity, multivalency, and indeterminacy of all texts, images, and maps and the folly of positivistic historical inquiry.⁶¹

Richard Helgerson observed astutely that my argument is governed by "one of the fundamental ploys of scientific positivism, the replacement or correction of a less adequate idea with a more adequate one."⁶² It would be easy to excuse myself by saying that my remarks are exploratory, not definitive or substantive. Or I could claim that the history of cartography – and cartography – requires the syncretism of both positivist and deconstructionist strategies if it is to flourish. I could argue that our map of theory should constantly be redrawn for each cartographic event, and that we need to be eternally openminded, eclectic, and pragmatic. Or perhaps I could reformulate deconstruction as a negative variant of positivism so that I could be absolved from the sins of my own apparent inconsistency. I remain uneasy, however. Helgerson's point takes us a step further. He raises the problem of the 'truth claims' of this deconstructive enterprise. Taking 'truth' in the dictionary sense of conformity to 'reality' or 'actuality,' I find it a harder word than I would choose to apply to any form of representation. Of course, all history is acknowledgedly far more tentative, fragmentary, and biased than the usual positivist claim for knowledge. Nevertheless I would reject "the more extreme claim of deconstruction" (as Robert Baldwin puts it) "that knowledge or communication are not possible ... [and that maps] are constructed by the viewer and cannot be

known historically.”⁶³ For even if we are no longer so naive as to expect to find the ‘gospel truth’ or the ‘naked truth,’ we can continue to search for readings of maps that are flexible, sensitive, and non-reductive and that make more sense to us and our generation. The paradox is that even were a social history of cartography to be written with a combination of a reformed positivism and a judicious deconstruction, it would be unlikely to make these insights less elusive. The more we come to see maps as deeply embedded “into the hopeless tangle of other objects, events, conflicts, texts, audiences, and responses,” the more interpretation becomes yet more

problematic, tentative, inherently unsatisfactory, at best one of a multitude of valid preliminary readings, each reflecting the historical questions, priorities, and values of its author and each contributing to an ongoing, endless process of ever more complex readings.⁶⁴

Such a conclusion may be depressing to those who have hitherto found it easy to legislate between genuine and spurious knowledge. Richard Helgerson’s contribution, however, may be to force us to be more agnostic and to urge us to remain always suspicious to our own disciplinary narratives.

AN ALTERNATIVE WORLD IN THE TOPOGRAPHICAL MAP

For those who still doubt the relevance of social theory to cartography, I will extend the argument by claiming that it can have a beneficial and practical side to it. Deconstruction, by making us more suspicious of some of the knowledge claims of cartography, may help us to reorder the mapmakers’ priorities in representing the world. As we begin to unmask the map, we also begin to unmask some important ethical issues. Those who raise questions about the nature of maps, about how they act as a power-knowledge in society, about the human values they enshrine, and about how they respond (or do not respond) to the needs of ordinary people in society, are not merely trying to rewrite history. They are also alerting us to the present. Recognizing that talking about theory is in itself a political act, they are asking us to act.

If we accept that cartographic representation is ineluctably a form of power, then we will take more care about the categories of objects we show in our topographic maps. If we accept that silence is an affirmative statement, we will be more careful about their omissions. And if we accept that all maps are rhetorical utterances, we will care more about their composition because that too, when linked to content, makes a persuasive statement about the way we prioritize our world whether we intend it or not. It is particularly urgent that we act with respect to the future of our topographic maps. These great national sheet map series, published at scales varying from 1 : 24,000 to 1 : 100,000, and issued in successive editions since at least the nineteenth century, were once seen as the crowning glory of that country’s cartographic achievement. But now, in the digital age of the 1990s, they are regarded by some as dinosaurs. The traditional paper map is under siege. So what? it may be asked. To judge from the balance of current

academic appointments, supposedly a barometer of intellectual judgment, the new approach of GIS *has* already become established as the "new device to obtain deeper knowledge about reality."⁶⁵ Apart from the growing confusion about the distinction between cartography and GIS, there is also an ethical issue at stake. What we have is a new technology. Why should it be expected to perform *all* the social functions of the traditional topographical map? We do not assume a CD-ROM (compact disc—read only memory) will really ever replace the physical book. My view is that published maps must remain part of our vision of the future. Moreover, with a socially relevant content and an imaginative design,⁶⁶ their contribution to a civilized society will go far beyond the provision of useful spatial data.

This is not just a quirkish opinion. My argument is that generally available *published* maps of any country, issued at a reasonable cost, are the most democratic way of making geographical knowledge about that country and people widely available. Whatever is said to the contrary, there remains the risk that computer technology will remain elitist and that its public availability will be either limited or centrally controlled and that it will be more difficult for ordinary persons to assess data quality. Already power is being consolidated as each central agency determines which aspects of the world are to be 'on line.' It is doubtful if digital tape 'maps' will reach many individuals other than researchers, government agencies, or cartographic businesses, even were there to be a satellite TV channel for cartography. No: the topographic map should continue to constitute the cartographer's best chance to make a humane statement about the world, one that goes beyond immediate practical needs. What is needed is not fewer maps but more maps; not only more computer literacy but also more cartographic literacy.

It is uncertain whether topographical maps will be given an opportunity to make such a contribution. There is a paradox in the present threat to the traditional map. The digital computer, capable of storing and manipulating ever larger quantities of geographical information, not only offers an unprecedented opportunity to create alternative maps of the world we live in but also the opportunity of reintegrating cartography through the linking of all stages of information gathering and processing. No longer need the product be divorced from the world that it is mapping.

In fact, cartographers have made a substantial contribution already to the new technology. Whereas the traditional topographic map was seen as a document with a long-term continuity, cartographic policy makers are now accepting the view that map content might change fundamentally. An example of the new thinking is provided by the United States Geological Survey in relation to the future of its 1:24,000 topographic map series. As its recent report forcibly articulates the need is for a change in mapping priorities.⁶⁷ Notwithstanding the official style of the document, a sense of a crisis leaks from between the lines. We are told that while in the century-and-a-half following the establishment of the Survey in 1879, the technology for making maps changed significantly in response to the invention of the camera and the airplane, the maps remained the same. They "continued to look much the same and contained essentially the same categories of information"⁶⁸ throughout the period. The tacit admission here is that technological progress does not automatically translate into maps that are

more relevant in a society. Even more interesting, in view of the cherished belief that cartographic bias belonged only to propaganda maps, is the overt admission that the traditional topographic maps – described, for example, in Morris Thompson's *Maps for America*⁶⁹ – were also biased in their content:

the current National Mapping Program can be viewed as a by-product of research in earth science disciplines. It has great value as such, but this traditional emphasis on physical (or 'natural') resources as primary map categories ... has given it certain biases. These biases restrict its value to potential users across the nation who have different geographic information requirements – be they socioeconomic, geopolitical, scientific, cultural, or demographic in nature.⁷⁰

Or again: "The production of maps emphasizing physical over cultural features is increasingly less relevant in an economy that is dependent more on human [that is to say information based] than on physical resources".⁷¹

Coming from a government mapmaking agency, such statements seem to be revolutionary. Topographical maps, they are saying, should change and the technology is available to make the changes. I am not convinced, however, that in future maps are really likely to become all that much more socially responsive. Substituting details of the built landscape for the physical landscape does not in itself engender relevance or sensitivity to ethnic diversity. For instance, do USGS maps really have to ignore the diversity of the religions they portray? Why do they continue to employ a cross sign indiscriminately for a mosque, a synagogue, and a Christian church?⁷² As a rule, official cartography does not view the pursuit of social goals in the representation of the landscape as part of its mission. It may be anticipated that the emphasis is more likely to be on opportunities "to contribute significantly to the overall [national] economy."⁷³ The portrayal of features primarily for everyday educational, environmental, historical, or recreational uses are likely to take second place to those that promote the workings of other branches of the US government or business efficiency and competitiveness. Even so, it will surely continue to be too 'political' – disagreeable to industry for various reasons – to show toxic waste sites. Indeed the danger is that the increasingly 'sophisticated' technology will actually impoverish the standard topographical map series. The signs are already there. The USGS is considering downgrading standards it had long adhered to for the representation of buildings on its maps. We are told:

For many years the USGS has depicted two categories of buildings on its topographic maps. When the maps were being produced for the first time, USGS used field surveys to determine Class 1 buildings (used primarily for human activity) versus Class 2 (used primarily for storage, machinery, or animals).

With more primary mapping and revisions being done from aerial photography, making this distinction accurately has become difficult. USGS is proposing to drop the two-tiered system ... This change would expedite mapping operations.⁷⁴

The all-seeing electronic eye, and the 'technological dividend,' promises little for

the map of the future. The talk today is of buildings but the question that is raised is what will disappear tomorrow as field work further declines and we are obliged to rely on whatever information can be summoned on our computer screens. Are we returning to a new Dark Ages? Will the GIS specialists become the new priestly class, determining our image of the world just as surely as did the makers of the MAPPAEMUNDI?

Yet more contentious is the matter of ethics in maps. It will be a continuing struggle to persuade government agencies to reconstitute maps so that minority groups are properly acknowledged – as in the matter of Indian archeological sites – and to remove discriminatory names. The history of the restoration of Inuit place names on the maps of northern Canada, will demonstrate how complicated the politics of cartographic representation can be. For instance, for some Indian groups, the religious significance of special names prohibits their publication on maps. And there is the hazard of a backlash for every liberal attempt to obtain greater equity through cartographic representation, as in the 1970s when the attempt to change Mount McKinley in Alaska to the American Indian name ‘Denali’ (‘the Great One’) was thwarted by Congressmen from Ohio (home state of McKinley) who introduced a resolution to make the name McKinley permanent.⁷⁵ For some bystanders, the restoration of Inuit names on the maps of Canada is an unwarranted government interference and a bureaucratic waste of money, and a monetarist morality takes over.⁷⁶ Yet others, as we learn from *The Ottawa Citizen*, accuse the Northwest Territories of racism for ‘wiping out history’ by replacing a number of English place names (such as Frobisher Bay) with Inuit ones.⁷⁷ A parable of such toponymic politics can be found in recent events in Texas. They demonstrate the ethical issues in which cartographers might find themselves embroiled. The case was reported of a mountain, a 1300-foot peak on a cattle ranch forty miles north of Austin. Its name was ‘Niggerhead Hill’ but the proposal was that the name be changed to that of a Black historian. The rest of the story can be related in the words of *The New York Times*:

The land has been in Dorothy Igau’s family since 1910, and she says she does not want the name of a stranger on her mountain ... Mrs. Igau said, “That makes no sense to me. I can see where it shouldn’t be called ‘Niggerhead’ but that’s what everyone around here knows it as, and it’s not bothering anyone.”

As a compromise, the names ‘Warbler Hill’ and ‘Warbler Creek’ were suggested, for the rare golden-cheeked warbler, which is native to the area. ... Mrs. Igau and her family have grudgingly agreed. “I’ve never seen a warbler,” she said. “There’s more rattlesnakes out here than warblers.”⁷⁸

Such examples, quaint as they may seem on the surface, conceal some fairly basic ethical issues. We are dealing with the right of free speech, the right of property owners, the rights of minorities (not to be demeaned by place names in the public record), and the relative power of Federal government and locally elected democracies. In seeking to destroy the past, we are in danger of destroying a witness to the roots of a racial bigotry that still divides our society. Facile or evasive reactions to the problem will not do. Consider, in the case of the United

States Board of Geographic Names, just what a 'conservative' policy in such matters really means. Their statement is strongly political, but scarcely ethical. It is

to interfere as little as possible with the use of names in everyday language because attitudes and perceptions of words considered to be pejorative vary between individuals and can change connotation from one generation to another. Geographic names are part of the historical record of the United States, and that record may be either distorted or disrupted by the elimination of names associated with particular groups of Americans. Such unwarranted action by the Board could, in time, be a disservice to the people the process is meant to protect.⁷⁹

However, from the point of view of the historical record, a place name on a map is not like a monument in the landscape, a unique feature that once destroyed is erased forever. Maps are made – and survive – in long print runs. There are more than enough archival copies of USGS maps across the country to preserve the 'historical record' of past prejudice irrespective of new policies. Even so, to retain these names on the map today is to condone a living memorial to those very injustices that we should be seeking to eradicate in our society. Cartography, we see, is never merely the drawing of maps: it is the making of worlds. Deconstructing the map is deconstructing of the society that produced it.

There is one more facet to this train of thought to consider: the effectiveness of cartographers, as practitioners and teachers and through their professional organizations, in their reaction to the threat posed by digital technology to the standard topographical map. To what extent, too, are they insisting on the need to make these maps a more sensitive portrayal of a socially constituted world? Are they concerned at all with how maps could help to answer the Socratic question 'How should one live?' My own view is pessimistic. It seems to me that most cartographers are inherently ambivalent about the future of the standard topographic map. I fear that most envisage some sort of a rebirth of the familiar, albeit in new format. It is even possible that some are too busy securing their future in the world of GIS (for the materialistic reasons Michael Blakemore identified⁸⁰) to spare a dime for the topographical map. I am not even convinced that all are agreed on what a map is today, or is to be. Nobody would confuse a surveyor's compass traverse and notebook – with its columns of distances and angles – with the map that was plotted from it. Likewise, failure to distinguish Ptolemy's co-ordinates from the maps drawn from them would raise more than a smile. Yet, the ICA, in its now well-known definition, have done just that, in confusing a digitized spatial data base (literally, myriads of magnetized particles whirling around on a disk) with the map produced from it.⁸¹ For the ICA, oblivious to the contradiction inherent in its own definition, the 'end product' of cartographic processes (the map) is to be 'visual, digital, or tactile.' Yet how can *numbers*, the constituents of what has been called, appropriately enough, the 'invisible map,'⁸² be described as a map before they have been processed into an *image* (the visual map)? In following the politics of expediency rather than linguistic logic, and anxious to ward off (in the words of one President of the ICA) the threat of 'rapid submergence' by the new GIS-based technology,⁸³ the ICA has managed to shoot itself in the foot. It has given the non-map parity with the map!

My second concern about the future of the topographical map centers on the persistent privileging of the thematic map by academic cartographers. A false dichotomy has been created between 'general reference maps' and 'thematic maps.' The underlying assumption is that, as an analytical tool, thematic maps were more proper for an aspiring scientific discipline.⁸⁴ Claims, some rather overblown, have been made for their revolutionary nature. At the same time, such claims may have been no more than attempts at legitimizing the modern discipline by pointing up its antecedents.⁸⁵ But the fact remains that as an image of the world, and especially a socially constituted world, they are reductionist. Despite their visual potential in popular culture and in education, in the words of one critic, they are no more than a "formulaic transcription of an impoverished reality using a vocabulary of only literal denotative meaning."⁸⁶ In a thematic map, the world becomes – as Michel de Certeau puts it in another context – a

... line on the map. ... Itself visible, it has the effect of making invisible the operation that made it possible. These fixations constitute procedures for forgetting. The trace left behind is substituted for the practice. It exhibits the (voracious) property that the geographical system has of being able to transform action into legibility, but in doing so it causes a way of being in the world to be forgotten.⁸⁷

Seen in this light, thematic maps are the most rhetorical of all our maps and indeed, we may yet come to look back on the period of their ascendancy in geography as an age of graphic antiquarianism. This takes us a long way from the dogma that thematic maps are the key to the future of cartography. According to this,

The thematic map must become a more important, more timely and more relevant product if cartography is to make a more effective contribution to development and environmental challenges. The topographic map has, in the past, been the product in greatest demand during wars; the thematic map should be seen as a major cartographic product for another kind of war – the war against poverty, ignorance, disease and the destruction of our environment.⁸⁸

While the agenda can be applauded the emphasis must be questioned. The implication that topographic maps should be relegated to become the instruments of the 'past' is unacceptable. Thematic maps may well have their specific uses, such as helping to pinpoint strategic problems for central governments or to simplify issues in the spatial science type of geography, but they have to be complemented by published topographical maps. It is only the topographical map that can inscribe the *gestalt* of the ordinary landscapes of the world. It is only the topographical map that is intelligible and available to a larger proportion of its citizenry. A topographic picture – an integrated picture – of environmental and social conditions and a topographical record of salient cultural legacies are vital adjuncts to the art of living and to the making of decisions. Unless we are to leave everything to the politicians we need topographical maps for the planning of a better tomorrow for all.

A third, and final, ground for pessimism about the future of topographical

cartography is based on the failure of cartographers to engage wholeheartedly in the political process on its behalf. Even as reviewers, cartographers tend to be concerned with maps in the technical sense. It is rarely that they attempt to evaluate them against social needs. Could it be true that 'Cartographers are terrible critics?'⁸⁹ No doubt cartographers discuss these matters at conferences but exactly who is grappling with the ethical dimension of what maps ought and ought not to show? Why is there not an ICA Commission on Cartographic Ethics instead of yet another on cartographic communication? Such questions return us to the theoretical debate and the picture drawn by one of my critics of knowing but pliant cartographers, fully aware of the shortcomings of their products but unable to overcome budgetary constraints and institutional power relations. Is the world really so ruled that there is no challenge – even from the *inside* – to the unholy alliance of bureaucracy and technology that gives modern governments so much power and surveillance over our lives? I really cannot accept the touching, but supine, portrait of cartographers as always "loyal and skilled servants and no more."⁹⁰ This is the very negation of a participatory democracy. It is certainly not a legitimate argument for those who claim to *profess* cartography in the academy: since when has the primary law of cartographic representation been 'Do always as thou art mandated'? It is true that some are still constrained by a policy of official secrecy but most of the issues that really matter in 1990 relate to urban blight or toxic waste rather than to the sites of intercontinental missiles. Surely everyone does not have to wait for 'action from above'? I share Denis Wood's frustration and his experience in "that most mapmakers are puzzled to imagine that their actions as cartographers are in any way related to the things about the world that trouble them."⁹¹ As he rightly says, "cartographic institutions, technologies, and map products are *already* heavily politicized." So why deny it or why bother to feign neutrality? Why hide behind a technological mask? Maps should continue to reflect the values of society at large, as their history has shown us they have always done. Political consciousness means caring about the way maps constantly present and represent the world.

CONCLUSION

A conclusion to a discussion such as this is neither needed nor appropriate. The challenge to and continual crisis of representation is universal and not peculiar to cartography. If we take the theory of deconstruction as a metaphor for critical thinking, it can become the mechanism for exchange not only between cartographers and geographers and between academics and professionals, between public and private sectors, but also between the widest possible spectrum of disciplines. Between, in short, everyone who cares to talk about the map. Cartographers can learn much about their experience of trying to represent the world from subjects such as architecture, art history, design, literature, or music. Committed technologists may find the thought of 'still more social theory' distasteful but it is, I have tried to show, the very fixity and inward-looking posture of cartographic theory that has isolated it from certain important aspects of the world, even while it claims to be practical.

How to respond positively to the challenge and the new opportunities of the 1990s? How to create an emancipatory, rather than mandarin cartography? I offer three points. The first is that we should never underestimate the power of maps over 'the imagination, thought, and conscience' of their readers;⁹² the second is to make a plea for the ethics of cartographic representation; and the third is to stake a specific claim for published topographical maps in the cartography of the future. However we define and resolve the crises of technology, content, scale, regional specification, or social relevance, topographical maps have to respond more sensitively to people in the landscape and to their needs and aspirations. Why should it not come to pass that the topographic map could become to cartography as great books to literature, to be read at leisure and enjoyed as well as merely 'used'? Given the present alternative, topographical maps are still the most universal hope that cartography could become a poetry of place. Why should we not hope that maps will once more beautify our 'Halls, Parlors, Chambers, Galleries, Studies, or Libraries,'⁹³ or that we will once more have 'pleasure in the map'.⁹⁴ Will there be someone to say for future generations, as Robert Louis Stevenson did for his, that

I am told there are people who do not care for maps, and find it hard to believe. The names, the shapes of the woodlands, the courses of the roads and rivers, the prehistoric footsteps of man still distinctly traceable up hill and down dale, the mills and the ruins, the ponds and the ferries ... here is an inexhaustible fund of interest for any man with eyes to see or twopence-worth of imagination to understand with.⁹⁵

I fear that in 2090 it may be written "I am told there are people who have never seen a topographical map." Or will maps become merely "a regressive parent of GIS"?⁹⁶ What happens to maps in the future depends in part on the extent to which cartographers are willing to shed their inward-turning habits and to come to terms with the social and political grounding of their own knowledge. If they are eventually assigned a subordinate role in society, it will be their own obsession with technology that will be to blame.

I end as I began, with the words of Maya Sonenberg. Her field is literature, not cartography, yet she believes

It has always been this way with the mapmakers: from their first scratches on the cave wall to show the migration patterns of the herds, they have traced lines and lived inside them.⁹⁷

The real crisis will be when the mapmakers finally cease to live within their maps and when the age of technicity is all that is left for cartography.

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A draft paper by David Woodward, 'The Representation of the World' (to appear in Judy Olson, Ron Abler, and Mel Marcus, eds., *Geography's Inner World*, forthcoming), has been particularly helpful in orienting me to the tensions created by recent technological developments in cartography. I have also benefited from comments on the 'deconstruction debate' by Catherine Delano Smith of Queen Mary College, University of London.

NOTES

¹ M. Visvalingam, 'Cartography, GIS and maps in perspective,' *The Cartographic Journal* 26, 1989: 26–32.

² J.B. Harley, 'Deconstructing the map,' *Cartographica* 26/2, 1989: 1–20.

³ 'Responses,' *Cartographica* 26/3 & 4, 1989: 89–121.

⁴ I link GIS with cartography here especially in its attempt to promote a new technology of 'visualization' (a term increasingly employed by GIS specialists when they make what we used to call maps).

⁵ As one of my critics implies: Anne Godlewska, 'To surf or to swim?' in 'Responses,' 96–98.

⁶ Andreas Huyssens, 'Mapping the postmodern,' *New German Critique*, 33, 1984: 5–52.

⁷ I borrow this phrase from David Harvey, *The condition of postmodernity. An enquiry into the origins of cultural change*, Oxford: Basil Blackwell, 1989, p. 40, where it is applied to architecture.

⁸ D.R.F. Taylor, 'Postmodernism, deconstruction and cartography' in 'Responses,' 114–17.

⁹ Wolfgang Natter and John Paul Jones III in 'Responses,' 113–14.

¹⁰ The principal source for studying decisions on such names on USGS maps is the Board on Geographic Names, *Decisions on Geographic Names in the United States* Washington DC.: Department of the Interior, quarterly.

¹¹ For the present policy see Donald J. Orth, *Principles, policies, and procedures: domestic geographic names*, Reston, Virginia: United States Board on Geographic Names, 1989, 12: "The Board has a firm policy prohibiting the use of a word in an official geographic name considered by the Board to be derogatory to any racial, ethnic, or religious group."

¹² United States Board on Geographic Names, *Field Investigation of Native American Placenames*, Reston, Virginia: United States Board on Geographic Names, n.d.

¹³ 'Offensive map names are ordered removed,' *The New York Times*, 1 November 1988.

¹⁴ Lisa Belkin, 'On geographic names and cleaning them up,' *The New York Times*, 14 February 1990.

¹⁵ W.I. Reilly, 'Language and a nation's maps,' *New Zealand Cartographic Journal*, 18/2, 1988: 1–2.

¹⁶ Conversely, efforts to retain English names in these regions could be regarded as one of the symptoms of contemporary colonialism. See the comment on place names by Jan Morris, 'Wild-Blue-Yonder City,' *Saturday Night*, November 1989: 72. On the steps to restore Inuit names see 'Workshop on the writing of Amerindian place names,' *Canoma* 7/1, 1981: 10–17 and 'Resolutions of the Native Geographical Names Symposium, Ottawa, May 7–9, 1986,' *Canoma* 12/2, 1986: 1–8. For an historical perspective relating to Quebec see Jean Poirier, *Regards sur les noms de lieux*, Etudes et Recherches toponymiques 3, 1982: 135–37. *Le Toponyme*, 7/2, Octobre 1989, is a theme issue on native place names.

¹⁷ See, for example, 'What's in a name? For Indians, cultural survival,' *The New York Times* 4 August 1988 (the restoration of Apache names in an Arizona reservation).

¹⁸ Barry Lopez, *Arctic dreams. Imagination and desire in a northern landscape*, New York: Charles Scribner's Sons, 1986, 279.

¹⁹ *Ibid.*, 280.

²⁰ *Ibid.*, 284.

²¹ The phrase is that of Michel Foucault, *The History of sexuality vol. 1: An introduction*, translated from the French by Robert Hurley, New York: Vintage Books, 1980, 5.

²² Geoffrey Taylor, 'Why not a map showing the places to avoid?' *Manchester Guardian Weekly* 14 May 1989.

²³ Morris M. Thompson, *Maps for America. Cartographic products of the U.S. Geological Survey and others*, 2nd ed. Washington DC.: United States Department of the Interior, 1981, 70.

²⁴ James Brooke, 'A most unlovely slum ...,' *The New York Times* 15 May 1990.

²⁵ Denis Wood in 'Responses,' 117–19.

²⁶ Richard Helgerson, 'Dismantling to build' in 'Responses,' 98–101.

²⁷ Arthur H. Robinson and Barbara Bartz Petchenik, *The nature of maps. Essays toward understanding maps and mapping*, Chicago and London: The University of Chicago Press, 1976; J.S. Keates, *Understanding maps*, London and New York: Longman, 1982.

²⁸ Most recently – with many critical analogies for understanding the case of cartography – see David Harvey, *The condition of postmodernity. An enquiry into the origins of cultural change*, Oxford: Basil Blackwell, 1989.

²⁹ Alberto Pérez-Gomez, *Architecture and the crisis of modern science*, Cambridge, Mass.: MIT Press, 1983, 4.

³⁰ *Ibid.*, 6.

³¹ Cartographers and GIS specialists would find relevant the debates in Wiebe E. Bijker, Thomas P. Hughes and Trevor J. Pinch, eds. *The social construction of technological systems: New directions in the sociology and history of technology*, Cambridge, Mass.: MIT Press, 1989.

³² Roger Chartier, 'Meaningful forms,' in 'Liber' 1, 8–9, *Times Literary Supplement* 1990.

³³ All in 'Responses.'

³⁴ Dominick LaCapra, *History and criticism*, Ithaca and London: Cornell University Press, 1985, 42.

³⁵ Taylor, 'Postmodernism, deconstruction and cartography,' 117.

³⁶ J.B. Harley and David Woodward, 'Why cartography needs its history,' *The American Cartographer* 16/1, 1989: 5–15.

³⁷ Taylor, 'Postmodernism, deconstruction and cartography,' 116. I note that Taylor agrees that this process must be extended to a rhetorical reading of maps that are equally, to use the words of Ana María Barrenechea, a continuous mixture of the 'historic' and the 'fictitious': Ana María Barrenechea, *Borges The Labyrinth Maker*, edited and translated by Robert Lima, New York: New York University Press, 1965, 128.

³⁸ Joel Morrison, 'President's Preface' in *Cartographical innovations. An international handbook of mapping terms to 1900*, edited by Helen M. Wallis and Arthur H. Robinson, Tring: Map Collector Publications [1982] Ltd. in association with the International Cartographic Association, 1987, viii.

³⁹ For a fuller discussion of this issue see J.B. Harley, 'Innovation, social context and the history of cartography / Review Article,' *Cartographica* 24/4, 1987: 59–68.

⁴⁰ Michael Blakemore, 'Deconstructing cartographers – via deconstructing the map' in 'Responses,' 90–93.

⁴¹ In the sense that deconstruction is sometimes said to banish the writer from the process of writing, treating language as a system of culturally determined signs, but ignoring the personal input of the author.

⁴² David L. Hull, *Science as a process: An evolutionary account of the social and conceptual development of science*, Chicago and London: University of Chicago Press, 1989, p. 31.

⁴³ As proposed by the Commission on the History of Cartography of the International Cartographic Association and reported by Helen Wallis, 'Cartographers in Morelia, Mexico,' *The Map Collector* 41, 1987, 43. In a similar vein, a well-attended session at the Annual Conference of the Association of American Geographers in Toronto, 1990, was devoted to the reminiscences of the 'founders' of American academic cartography.

⁴⁴ W.J.T. Mitchell, *Iconology: Image, text, ideology*, Chicago and London: The University of Chicago Press, 1986.

⁴⁵ This has generated a lively debate in human geography. For an introduction see Victoria A. Lawson and Lynn A. Staeheli, 'Realism and the practice of geography,' *Professional Geographer* 42/1, 1990: 13–20.

⁴⁶ Anthony Giddens, *A contemporary critique of historical materialism* vol. 1, *Power, property and the state*, London: The Macmillan Press, 1981.

⁴⁷ Quentin Skinner, 'Hermeneutics and the role of history,' *New Literary History* 7/1, 1975: 209–32; for a cartographic discussion see John Pickles, 'Texts, hermeneutics, and propaganda maps' in T. Barnes and J. Duncan, *Languages of landscape: Text, metaphor and discourse*, London: Routledge, 1991, forthcoming.

⁴⁸ Mitchell, *Iconology*, 38.

⁴⁹ One of the paradoxes of the latest technological revolution in cartography, involving the introduction of GIS, is that while it emphasizes images made by machines it also has the *potential* to broaden the disciplinary outlook by forging links with new subjects that use the same systems or contribute to their development.

⁵⁰ J.B. Harley and David Woodward, eds., *The history of cartography*, volume one, *Cartography in prehistoric, ancient, and medieval Europe and the Mediterranean*, Chicago and London: The University of Chicago Press, 1987, xvii.

⁵¹ Arthur H. Robinson, Randall D. Sale, Joel L. Morrison, and Phillip C. Muehrcke, *Elements of Cartography*, 5th ed., New York: Wiley, 1984, 3.

⁵² David J. Cuff and Mark T. Mattson, *Thematic maps: Their design and production*, New York and London: Methuen, 1982.

- ⁵³ Matthew H. Edney, *In 'Responses,'* 93–95.
- ⁵⁴ Godlewska, 'To surf or to swim?' 96–98.
- ⁵⁵ *Ibid.*, 98.
- ⁵⁶ David Harlan, 'Intellectual history and the return of literature,' *The American Historical Review* 94/3, 1989, 581–609.
- ⁵⁷ LaCapra, *History & Criticism*, 17–18.
- ⁵⁸ Godlewska, 'To surf or to swim?', 97.
- ⁵⁹ Jean François Lyotard, *The postmodern condition: A report on knowledge*, translated by Geoff Bennington and Brian Massumi, Minneapolis: University of Minnesota Press, 1984, 10.
- ⁶⁰ David Lodge, *Small world. An academic romance*, London: Penguin Books, 1985.
- ⁶¹ Robert Baldwin, *In 'Responses,'* 89–90.
- ⁶² Helgerson, 'Dismantling to build,' 99.
- ⁶³ Robert Baldwin, 'Introduction to 'The social history of northern renaissance art,'" College Art Association Conference, New York, February 1990, unpublished.
- ⁶⁴ *Ibid.*
- ⁶⁵ A. Papp-Váry, 'The science of cartography' in D.W. Rhind and D.R.F. Taylor, eds., *Cartography past, present and future*, London, New York: published on behalf of the International Cartographic Association by Elsevier Applied Science, 1989. p. 108.
- ⁶⁶ In recent years another victim of technological change associated with USGS maps has been research into design issues: see David Woodward, 'Map design and the national consciousness: Typography and the look of topographic maps,' *Technical Papers of the American Congress on Surveying and Mapping*, March 1982, 339–47.
- ⁶⁷ *Spatial data needs: The future of the national mapping program*, Washington, DC.: National Academy Press, 1990.
- ⁶⁸ *Ibid.*, 4.
- ⁶⁹ Thompson, *Maps for America*.
- ⁷⁰ *Spatial data needs*, 8.
- ⁷¹ *Ibid.*, 42.
- ⁷² Thompson, *Maps for America*, 58.
- ⁷³ *Spatial data needs*, 1.
- ⁷⁴ *Wisconsin Mapping Bulletin*, July 1989, 6.
- ⁷⁵ Mark Wexler, 'The naming (and misnaming) of America,' *National Wildlife* August-September 1978: 2–11.
- ⁷⁶ See David C. Jolly, *Antique maps, sea charts, city views, celestial charts, and battle plans. Price Record and Handbook for 1988*, Brookline, Mass.: David C. Jolly, 1988, where a reactionary paragraph (p. 6) is headed 'Portions of Canada vanish!'
- ⁷⁷ *The Ottawa Citizen*, 7 May 1990.
- ⁷⁸ Belkin, 'On geographic names.'
- ⁷⁹ Orth, *Principles, policies, and procedures*, 10.
- ⁸⁰ Blakemore, 'Deconstructing cartographers,' 90.
- ⁸¹ Taylor, 'Postmodernism, deconstruction and cartography.' The definition on p. 115 reads in full: a map is "A holistic representation and intellectual abstraction of geographic reality intended to be communicated for a purpose or purposes, transforming relevant geographical data into an end-product which is visual, digital or tactile." Such is the poverty of this definition that its emphasis is solely on a technical transformation rather than how the map *constructs* the world in a social sense.
- ⁸² The notion is also given currency elsewhere in the literature. See, for example, the rationalization employed by Visvalingam, 'Cartography, GIS, and maps in perspective,' 28, where it is written "we will have to accept that cartography is concerned with two types of maps, namely the *visual map* and the *digital map*. For the spatial database is not just a repository of data, it is a model of spatial reality." Later in the same paragraph this author appears to further conflate the digital map, defined as the database, with the 'electronic display map' so that a somewhat tendentious form of special pleading appears to pervade the whole argument. On the notion of the 'invisible map' see Donald F. Cooke, *The invisible map: Computers and the death of cartography?* New London, New Hampshire: ... , 1989.
- ⁸³ D.R.F. Taylor, 'New perspectives on cartography,' *Cartographic Perspectives* 4, 1989–90: 24–29.
- ⁸⁴ Joel L. Morrison, 'The science of cartography and its essential processes,' *International Yearbook of Cartography* 16, 1976: 84–97.
- ⁸⁵ Arthur H. Robinson, *Early thematic mapping in the history of cartography*, Chicago and London: The University of Chicago Press, 1982.
- ⁸⁶ D.P. Marsh, 'A cartography of popular maps', Ph.D. dissertation, Pennsylvania State University, 1983, 56; for another criticism see also J.B. Harley, 'Historical geography and the cartographic illusion' *Journal of Historical Geography* 15/1, 1989: 80–91.

⁸⁷ Michel de Certeau, *The practice of everyday life*. Translated by Steven Rendall. Berkeley: University of California Press, 1988, 97.

⁸⁸ Taylor, 'New perspectives,' 28.

⁸⁹ Here I am paraphrasing Michael Dear, 'Guest Editorial – the poverty of criticism' *Area* 21, 3, 1989: 225–27, who writes "geographers possess only a rudimentary expertise in mounting serious critical studies, and tend to regard criticism of their own work as little more than a misguided assault on personal integrity. The ensuing culture of criticism is a wasteland from which we should extricate ourselves."

⁹⁰ Godlewska, 'To surf or to swim?', 97.

⁹¹ Wood, in 'Responses,' 118.

⁹² Christian Jacob, 'Les marges de la carte,' in 'Responses,' 101–108.

⁹³ The Englishman Dr. John Dee writing in 1570: quoted by R.A. Skelton, *Decorative printed maps of the 15th to 18th centuries*, London: Spring Books, 1965, 1.

⁹⁴ Denis Wood, 'Pleasure in the idea: The atlas as narrative form,' *Cartographica* 24/1, 1987: 24–45.

⁹⁵ Quoted by P.D.A. Harvey and Harry Thorpe, *The printed maps of Warwickshire, 1576–1900*, Warwick: Records and Museum Committee of the Warwickshire County Council and the University of Birmingham, 1959, 1.

⁹⁶ The Orwellian thought is that of Visvalingam, 'Cartography, GIS, and maps in perspective,' 31.

⁹⁷ Maya Sonenberg, *Cartographies*, Pittsburgh: University of Pittsburgh Press, 1989, 3.

RÉSUMÉ 'Cartography, Ethics and Social Theory' donne suite à 'Deconstructing the Map' (*Cartographica*, vol. 26, no. 2, 1989, pp. 1–20) et aux réponses à cette article (voir 'Commentary', *Cartographica*, vol. 26, nos 3 et 4, 1989, pp. 89–121). On y soutient que l'absence de dimension sociale dans la théorie cartographique a conduit au délaissement des questions sociales dans le contenu des cartes et que toutes ces déficiences constituent une crise de représentation. On discute du dilemme de l'éthique cartographique – et de la réponse de la profession – dans le contexte de la transformation technologique imposée dans la cartographie topographique officielle par l'invention des systèmes d'information géographique. On prône ici le maintien des cartes topographiques dans leur forme actuelle, publiée, en soutenant qu'elles peuvent offrir une forme de connaissance géographique démocratique et humaniste.

ZUSAMMENFASSUNG 'Cartography, Ethics and Social Theory' ist ein Folgeartikel zu 'Deconstructing the Map' und zu den Erwidern auf jenen Aufsatz. Der Verfasser argumentiert, daß die Abwesenheit einer sozialen Dimension in der kartographischen Theorie zur Vernachlässigung der sozialen Belange im Karteninhalt führte, und daß diese Mängel zusammengenommen eine Krise der Repräsentation darstellen. Das Dilemma kartographischer Moral – und die Antwort des Berufsstandes – werden im Kontext der technologischen Umgestaltung der amtlichen topographischen Kartographie erörtert, die durch die Einführung der geographischen Informationssysteme bewirkt wurde. Der Verfasser befürwortet die Beibehaltung topographischer Karten in ihrer gegenwärtigen gedruckt veröffentlichten Gestalt, weil sie eine demokratische und humanitäre Form des geographischen Wissens darstellen.