

## THE FINE LINE BETWEEN MAPPING AND MAPMAKING

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**Abstract** Brian Harley's efforts to re-form the history and theory of cartography were doomed by his inability to free himself from the idealism and representationism that have passed for thinking in the field. Nor did his sturdy British empiricism help him understand the Continental thinkers who dazzled and inspired him. But what he wanted was vital: a proactive cartography embodying the self-conscious awareness only an honest, living history could provide, one that could foreclose the possibility of imagining cartography as objective, as value-free ... today.

Why didn't Brian Harley write the history of cartography he wanted to? Because he couldn't imagine that history had a structure, couldn't imagine that it was subject to the natural laws that governed cognitive development and evolution. Why couldn't he imagine this? Because he was the victim of a map, at least of his idealist, representational conception of it. The silences this embodied about the circumstances of its birth not only prevented Harley from admitting the map's origins in social discourse but obligated him to invent a creation myth exempting humans from these laws. That is, Harley didn't know what he was talking about.

I mean this ... *literally*. His effort to understand cartography kept getting mired in the swamp of map *use*. Reactionary and superficial, it never penetrated to the map itself. The problem for Harley remained the bad things people *did* with maps, and ultimately this left the maps themselves out of the picture. Insulated by an idealist conception of knowledge, Harley was never able to conceive of the map as other than a representation of reality; was never able to grasp the map as discourse function; was never able to understand that the heart of the problem wasn't the way the map was *wielded* but the map function

itself. His refusal to acknowledge the map as a *function* of social being – not just as something *colored* or *shaped* by this or that social vector – prevented him from seeing that mapmaking was *not* a universal expression of individual existence (like something we might call mapping), but an unusual function of specifiable social circumstances arising only within certain social structures. Because for Harley mapmaking *was* a universal function of the individual (it depended only on mapping), it was, in the end, *independent of society*; and for this reason ... *independent of history*, which, after all, is nothing but the description of the transformation of social life over time.<sup>1</sup> This precluded him from creating a modern (to say nothing of a post-modern) history of cartography.

### But to Get Concrete

One night Ingrid and Randall and Chandler and I were sitting around the table eating dinner when Chandler began to tell us about what a great time he'd had playing rollerblade hockey at Jeff's. Actually they hadn't played at Jeff's but on the empty tennis courts at Athens Road High School across the street.

Gesturing at his place mat Chandler said, "Here's the tennis court, bud," while his hand traced out two oblongs side by side.

"And here's the chain link fence around it," he added, whipping his fingers around the edge of the mat. "And you know the little strap in the middle of the nets? Well, we tightened them so we could make the goals. And you know how the tennis courts are green and they have that red crap around them? Well, the red crap was activation-land and the side that you activated the ball on activated the ball to be shot into the goals on the opposite side of the net – " much furious pointing and sketching with hands and fingers " – but if you activated the balls in the corners, the catty corner goal was activated to be shot at."

After looking up to make sure we were all with him he went on: "If you shot it through the middle – 'cut the trees' that's what we called it – if you 'cut the trees'," and here of course his fingers sliced down between the ends of the nets that were all but visible on the mat, "the goal was activated ... wait, I mean the *ball* was activated

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for every goal because you don't activate the goal, you activate the ball ... you know?"

Now, why did all this mapping ... not make a map? Because when dinner was over, the mat was picked up, shaken out over the sink, and put back in the drawer with the napkins and the rest of the placemats. And when it was taken out the next day, there was clinging to it not even the faintest trace of the tennis courts at Athens Road High.

Compare this disappearing act to what took place the following day when Jeff was trying to explain to Christy what they'd been doing. Because the hand Jeff waved over a piece of paper had a pencil in it, it produced a sketch map, which not only survived the day, but the next couple of months so that – here, here it is, *in my hand*. To make the image you're seeing – which is only a replica, a reproduction – I photocopied Jeff's map. ... (Figure 1)

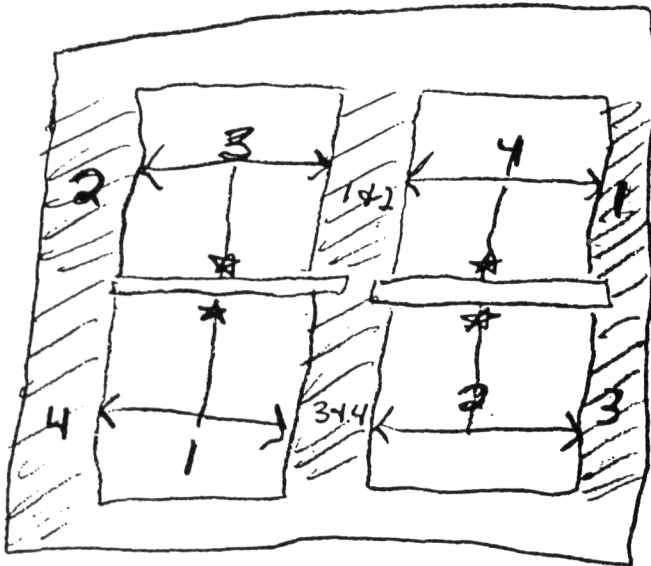


FIGURE 1. Jeff's sketch map.

... as I was unable to photocopy the trails of Chandler's swiftly moving hands ... which left no trails – not even fugitive trails like the ones left in cloud chambers – which left nothing, *nothing*, that is, beyond the long-term potentiation of the synaptic pathways in my hippocampus that enable me to describe his mapping today.<sup>2</sup> It's a thin line (*it's the thickness of the lead in Jeff's pencil*), but it is the difference between mapping and mapmaking. In the latter the map is always ... *inscribed*. It cannot be shaken off, it adheres, it sticks to the surface. No matter where you take it, it holds fast, it clings. No matter how long you wait for it to fall off, it hangs on, day after day, year after year, survives the trip from Raleigh to Atlanta, is passed from one generation to the next (Jeff's map will be reproduced in *Cartographica*, it will be preserved in libraries, it will last ... *forever*).<sup>3</sup> What does this imply?

One thing it doesn't imply is any difference between Chandler and Jeff. Jeff is not more able than Chandler,

he is not more advanced. Certainly it implies the existence of an inscribing tool and an inscribing medium (that is, the difference amounts to that between speaking and writing, between the oral and the literate). But Chandler too had available – if not perhaps at the table – the requisite tools. He could have gotten up and gotten them. Why didn't he? Why did Jeff make a map and Chandler not?

The answer is fundamental: Chandler didn't make a map because it wasn't called for in the communication situation in which he was engaged. I have previously described a situation in which Kelly, observing from the signs on my face that I *wasn't* following his description of a backyard soccer field, made a sketch map to help me out.<sup>4</sup> Chandler observed no such signs on our faces, the rollerblade arena he was describing was simpler, there was no point. So what was there about the communication situation in which Jeff found *himself* that required *him* to make a map? Well, there was Christy – who also had rollerblades – and he wanted to impress her, and not only with the rollerblading, but with the drawing (Jeff sketched the map in art class). Then, what he was trying to do was to compare *four* rollerblade arenas (this is evident as soon as the sketch is returned to the context from which I excised it), it *would* have been hard for Christy to follow, it would have been hard to keep in mind all these different places, to have grasped the relationships between all the goals and all the activation zones.<sup>5</sup> Differences in the communication situations explain why in one instance no map was made, but in another it was. And this is just as true for the production of maps in general as it is in this individual instance (Figure 2).

### Maps Affect Others in Communication Situations

Maps are able to work in communication situations because, like talk (and traffic lights and facial expressions), they are systems of signs.<sup>6</sup> By now the formal properties of sign systems seem to be well understood and broadly accepted, that is, they consist of alliances on the plane of the sign of signifieds and signifiers. But less frequently observed, and much less widely accepted, is that aspect of the sign highlighted by Colin Cherry nearly thirty years ago when he defined a sign as, "*a transmission, or construct, by which one organism affects the behavior or state of another, in a communication situation.*"<sup>7</sup> Now, both Chandler and Jeff wanted to affect the state of their auditors, but the achievement of this desired state demanded more in Jeff's case. What calls forth the map, then, is not just the desire to affect a change in another (that can be accomplished in any of a variety of sign systems), nor even the desire to affect a change in another's comprehension of what comes with the territory (in this case, goal activation – but Chandler brought about that change in me and Ingrid and Randall without making a map), but the desire to affect *so complicated* or *so substantial* a change in this understanding as to exceed the capacity of other sign systems (for example, words), or, to achieve this change with an efficiency unattainable by other sign sys-

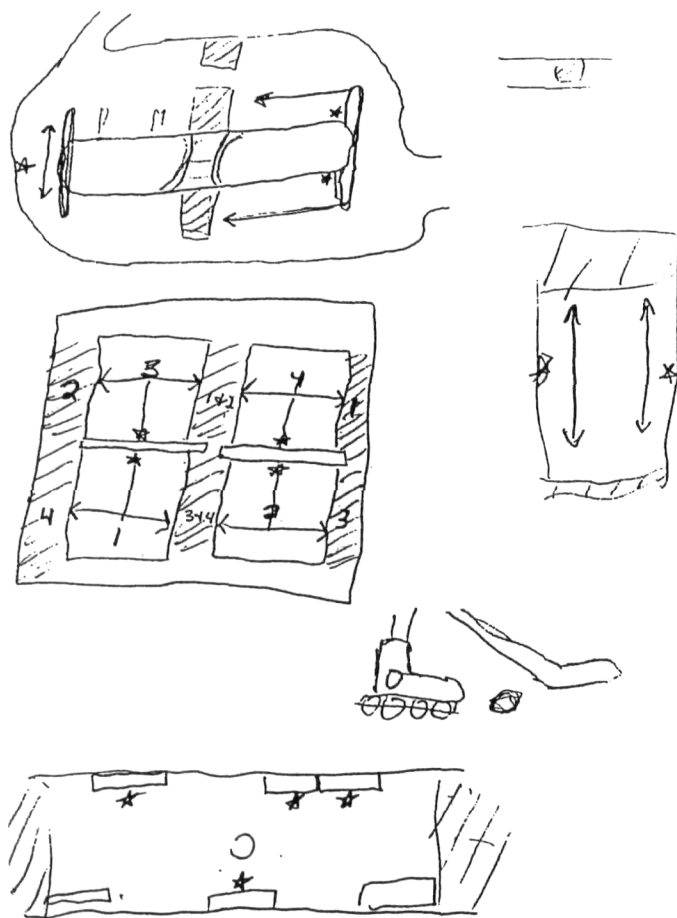


FIGURE 2. Everything Jeff sketched for Christy.

tems (you *could* do it with words, but it would take forever).<sup>8</sup>

The goal, then, is not to send a message, but to bring about a change in another, and it is the situation calling for this change that calls for the map. This situation is necessarily ... *social*. Evidently it is also ... *political*. Because it is out of their interaction in the social worlds they inhabit that people bring forth cultural products like maps, such "cultural productions [can only] be understood in relation to the perspectives and interaction contexts of these worlds, rather than as disembodied mental creations or the reflex products of non-cultural determinants of action."<sup>9</sup> That Brian Harley understood *this* the titles alone of his last papers make clear: "Texts and Contexts in the Interpretation of Early Maps," "Maps, Knowledge, and Power," "Secrecy and Silences: The Hidden Agenda of State Cartography in Early Modern Europe," and perhaps most eloquently, "Victims of a Map."<sup>10</sup> For Harley ... maps *were* cultural productions called forth in social situations where they affected the states and behaviors of others; that is, maps *did* induce social, economic and political change; were, as I have put it elsewhere, weapons in the fight for social dominion.<sup>11</sup> That this understanding represented something new in cartography

cannot be doubted. Suddenly – wonderfully! – cartography had a conscience.

### The Map Really Is a Social Construction of Reality

Did anything else come with this? Unfortunately not. Because Harley didn't understand that it was the *social situation* that called for the map (the map that then *changed* the social situation), he was never able to create the alternative cartographic epistemology he struggled to articulate, and without this the new history of cartography he hoped he was initiating was stillborn.<sup>12</sup> For all the political self-consciousness that is so exciting in Harley's late papers, there is still the same stuffy quality that Harley hoped he was opening the windows on. Despite, for example, the derivation of the title of "Victims of a Map" from the title of a collection of poems by the contemporary Palestinian Mahmud Darwish (and others), there is no sense in the paper that Harley is dealing with a general problem of contemporary relevance, his history is not living (but what is the point of it otherwise?), his victims all turn out to be native Americans who died centuries ago, they remain sealed in the past, there is even little sense of the social *co-construction* of the New World we find, for instance, in William Cronon's ecological history (that is to say, little sense of a *new* society created by Indians and Europeans *together*).<sup>13</sup> Harley's ambition remained limited to adding "a different dimension to cartographic history," to *wondering* "whether we can write a cartographic history which will accommodate both a European and an Indian perspective on the American past."<sup>14</sup>

These limited ambitions *did not* reflect Harley's desires. These were clear enough: Harley wanted a proactive cartography embodying the self-conscious awareness only an honest, living history could provide (there *was* a point to the history he wanted to write, it would *foreclose* the possibility of imagining cartography as objective, as value-free ... *today*). Instead the limitations derive from Harley's inability to shed his inherited idea of the map as a representation of a real world, from his inability ever to *really accept* the map as ... *a social construction of reality*. For Harley it would always remain, however partial, however selective, a map of the real world, just one being used to dubious ends. Here is Harley again, in one of his most attractive pieces: "Can there be a normative ethics or do we slide into a cozy relativism in which cartographic values vary with different societies, generations, social groups, or individuals?"<sup>15</sup> Now, if you believe maps are social constructions of reality there can be only one answer to this question. It's not a matter of *sliding into* relativism: cartographic values are *unavoidably* relative. Educated by social relations (by desires to induce changes in others) maps cannot but embody those situations (cannot but embody those desires). It is these *desires* that select, that choose to display this instead of that, to show it this way instead of another; and until we all desire the same thing, maps will vary with desire (that is, with societies, classes, gen-

erations, consensus groups, individuals). It is this *social* energy that maps put to work (this is the source of the power of maps). Harley *knew* this, but so deep in him was the map as representation that in the end he was unable to accept it.

Harley shared with most cartographers the belief that the map artifact was ultimately nothing but the transcription of *another* map, one pre-existent in a mapmaker's head.<sup>16</sup> Where did this idea come from? It seems to depend on a pervasive – but widely discredited – model of writing as a record of speech (that is, of mapmaking as an inscribed form of something called mapping, otherwise supposedly manifested in songs, narrative, wayfinding), of speech as an externalization of thought (that is, of mapping as an externalization of *mental* mapping), and of thought as the consciousness of a pre-verbal, pre-significant ... *pre-given* world.<sup>17</sup> But writing is *not* captured speech, which was never *thought* put into words, behind which was *never* anything ... *real*, anything ... *true*. Nothing ... *behind* ... the map guarantees it. Or throws it into doubt.

### The Map Exists only in Its Inscription

This seems to be the hard part to get, but the map exists only in its inscription. Chandler's gestures were not a map, they were never more than gestures. From a Piagetian perspective (from the perspective of developmental psychology), his gestures were a kind of *acting-in-space*.<sup>18</sup> For Chandler in particular they were a lot like being there, a lot like actually whizzing around the tennis court on his rollerblades, a lot like “cutting the trees,” like whacking the puck beneath the nets. Whether his gestures constituted a form of mapping or not, certainly the rollerblade hockey itself didn't: that was *just* rollerblade hockey. Now of course Chandler's hand gestures were *not* the same thing as moving around on the blades. He had, in Piaget's terms, already created an image (he *had* internalized a deferred imitation of the rollerblading). But it was still very concrete, it was still tied to his *images* of rollerblading (he *re-lived* the afternoon at the dinner table as he moved his hands). Before they could turn into a map, these internalized deferred imitations would have to be freed from the motor schema of the actual blading, and transposed from concrete mental manipulations on “real” objects (sticks, blades, tennis nets), to a strictly ideational plane in some kind of sign system (these abstractions would have to be wed to socially conventional signifiers (that is, the ideational plane is a socially constructed one<sup>19</sup>)). If this sign system were that of natural language, the expression could take the form of a story, of an oral description (or a song, or a songline). If the sign system were that of dance, the expression would take the form of a dance (right now I'm thinking of *West Side Story*, of the choreographed fight). If the sign system were that of cartography, the expression would take the form of a map. But just as the story would be a story rooted in the experience of the rollerblading (not in a mental story of that experience), and the dance would be a dance rooted in the experience

of the rollerblading (not in a mental dance of that experience), so the map too would be rooted ... *in the experience of the rollerblading* (not in a mental map of that experience): speech, dance and mapmaking would be co-eval expressions of the internalization of the deferred imitation of the sensorimotor schema ... *of the blading*. (We can call the spatial component of the blading a mental map if we want to, and we can call the ability to know where we and other things are mapping, but these are only metaphors, and not very good ones.<sup>20</sup>)

What determines the form of expression the internalization of the deferred imitation of the sensorimotor schema will take? *The social situation calling it forth*. And *this* social situation will call for a story and *that* social situation will call for a dance and a *third* will call for a map. But this does not mean that stories and dance and maps are the same thing. It only means they vary with the discourse function they fulfil.<sup>21</sup> And as the story exists in its telling, and the dance in its dancing, the map exists in its inscription. And it is the fine line of this inscription that differentiates something we might call mapping (but which is really just ... getting around) from mapmaking; and mapping *societies* from mapmaking *societies*, in the latter of which it is the inscriptive property of the artifactual map that permits it to serve the interests of the power elites who control the mapmaking process (as well as those who would contest them).

Harley's professed mentors, Michel Foucault and Jacques Derrida, operate(d) out of similar, if not identical, epistemologies, equally opposed to idealist, representational models of knowledge. As Harley's references to developmental psychology made clear, that was never a body of knowledge with which he felt very comfortable,<sup>22</sup> but Barbara Belyea has recently demonstrated to my satisfaction that Harley probably also never understood the ideas of Foucault and Derrida that apparently motivated his call for a new cartographic epistemology in the first place.<sup>23</sup> But actually this should have come as no surprise. For not only was Harley's epistemology idealist, but his method was first and last that of a British empiricist; and as Mary Douglas has pointed out with respect to social anthropology:

These two marks, of being British and empirical, are not accidentally linked. [Britain] is the home of philosophical scepticism, an attitude of thought which has insulated us more effectively than the North Sea and the Channel from Continental movements of ideas. Our intellectual climate is plodding and antimetaphysical.<sup>24</sup>

Yet at the same time Douglas acknowledged that, “in spite of these traditions, we cannot read much of [Claude] Lévi-Strauss without feeling some excitement,” going on to add that, “to social studies he holds out a promise of the sudden lift that new methods of science can give.”<sup>25</sup> Substitute Harley for Douglas, and Foucault and Derrida for Lévi-Strauss, and we can see recapitulated in the historiography



of the history of cartography, the history of social anthropology twenty years earlier. What I want to emphasize here is the way Harley's empirical bent not only ill-equipped him to deal with Derrida's and Foucault's epistemological conclusions, but prevented him from understanding their structuralist assumptions as well, assumptions embodied not just in *Derrida's* criticism and *Foucault's* history,<sup>26</sup> but in the history of *Marshall Sahlins*, in the social anthropology of *Lévi-Strauss*, in the semiology of *Roland Barthes*, in the grammar of *Noam Chomsky*, in the phonology of *Roman Jakobson*, in the linguistics of *Ferdinand de Saussure*, in the psychology of *Jean Piaget*, in the ecosystemics of *A.G. Tansley*, in the history of *Karl Marx*.<sup>27</sup> Harley's failure here not only vitiates his efforts to formulate a new cartographic epistemology, but undermined his efforts to create a more nomothetic history.

### The Play of Theory and Fact

I guess what I want to say is that Harley was fundamentally uncomfortable with ... *system*. There were always what seemed to him to be *stubborn* facts which denied the universality of *any* generalization. He said as much in the monograph on the history of cartography he co-authored with Michael Blakemore. Speaking of what they called the "Darwinian paradigm," they wrote:

Like all other attempts to explain history in terms of general laws – such as cycles or developmental stages – there remains the problem of trying to reconcile the partial explanations they apparently offer with awkward properties of individual historical sequences.<sup>28</sup>

This is muted in the remarks Harley co-authored with David Woodward in their *History of Cartography*,<sup>29</sup> but to a scientist even these are very strange sounding, for what else is science – even in its structuralist forms – if not an unending effort to reconcile the partial explanations of theory with the awkward properties of individual facts? It has always been these "awkward" properties that have propelled theory construction, just as it has been theory which has provided the framework for making sense of, indeed determining what might count as, facts. Harley – in concert with most other historians of cartography – construed as a problem the very mainspring of science in all its forms. Why did he do this?

Critical here was the exceptionalism that for Harley excluded humankind from the purview of science. "In the study of human activities *no* biological analogy can be entirely apposite," he approvingly quotes, as though humankind itself were not first and last a biological entity.<sup>30</sup> This exceptionalism was the more encompassing as humans were aggregated and allowed to interact in the historical arena. The social sciences were therefore different from the physical sciences – "with cartography there are particular dangers in any facile equation of the development of animal with cognitive systems," Harley wrote –

and history, as the human *story*, was *particularly different*.<sup>31</sup> This exceptionalism prevented Harley from seeing that his arguments *contra* facile progress applied with equal strength to history in the human *and* physical sciences; and that the rejection of progressivism did not therefore constitute a rejection of the applicability of insights from the latter to the former.

Here: following Van Doren, Blakemore and Harley noted that progressivism could be epitomized by four assertions: 1) that a definite pattern of change exists in the history of humankind; 2) that this pattern is not only discernible, but known; 3) that the pattern is irreversible; and 4) that change is always for the better.<sup>32</sup>

Now, structuralists and progressivists do both argue that human change has a pattern, and in general agree that this pattern is characterized by stages and transformations. But that's where any agreement ends. None of the structuralists I have just referred to (with the possible exception of Marx) asserts (or asserted) that this pattern is (or was) known. After all, each is (or was) struggling to know it. Now they see the pattern, now they don't, *but their very effort has a developmental structure that parallels the one they are trying to discover, and this recursiveness acknowledges that the discovered pattern is itself a construction of knowledge*. It also encourages the understanding that the pattern is reversible, that whether due to extreme social isolation, shrinking habitat, or crustal uplift, such reversal is not only possible but demonstrable.<sup>33</sup> Finally, "better" and "worse" are simply not developmental issues: imagine a geologist proclaiming a mature flood plain *better* than a youthful stream with its lakes, waterfalls and rapids. Imagine an ecologist claiming *superiority* for a mature meadow vis-a-vis a callow marsh. Or a developmental psychologist insisting that adults are *more desirable* than children. These are inconceivable, yet in each of these examples complex systems – streams, forests, children – transform themselves through readily identifiable stages in a regular way that is apparent in stream after stream, forest after forest, child after child, despite the stubborn individualism that distinguishes this particular stream from another, this actual forest here from that over there, my kid ... *from yours*.

After all, Van Doren's argument "that genetic, social and environmental influences qualify the validity of straight forward time progressions," would seem to be as applicable in general to, let's say, geology, as human history.<sup>34</sup> What else is geology but history, one moreover founded on a universal principle – Lyell's – relating past and present, a history in which the general laws (including cycles and stages) are continuously refined (I want to say "developed") by reconciling them with the (stubborn) individual geological sequences continuously *dug up* in the field. If it is true that genetics and social influences *per se* play no role in geological history, it remains nonetheless the case that all sorts of other influences do, and that therefore straight-forward progressions – such as envisioned in William Morris Davis' stream cycle – are continuously in-

fluenced, modified and interrupted by other earth forces (not excluding biological forces) which generate the complex geological history of any particular place. Instead of an opposition between general laws and particular history there is the patient elucidation of the latter in terms of the former (in which process the former is continuously reconstructed). Which is how geology can encompass the bewildering actuality of this or that layering of rock encountered in no more than a handful of roadcuts – laid down over millions of years, deformed by igneous intrusions, metamorphosed, twisted and overturned, split and separated, often by entire oceans – within a general theory ultimately reducible to the laws of physics, while the history of cartography cannot manage to generalize in any way about the maps created by a handful of humans societies over the past five or six hundred years. I do not mean to belittle the problem (God knows!), but there is no question that the most significant impediments to theory construction are the idealism, representationalism and exceptionalism Harley shared with most of his colleagues.

### Every Adult Has the Spatial Competence to Make a Map, But only Certain Societies Encourage Its Expression

What would an alternative theory look like? First, what does the current theory look like, that is, what does the exceptionalism, representationalism, and idealism produce in terms of an explanatory structure? Not much. What is argued here – though that makes it sound like it's more complicated than it is – is that *at various times various peoples made maps for various reasons* (some of which were very complex and have been worked out in great detail), but in general: *the more they knew, the better their maps, and those who knew the most first won*. Now, you can fancy this up as much as you like (and isolate and castigate the nationalist component); but fundamentally this is the construct underlying the history of cartography. No wonder Harley wanted something ... new.

The theory I'm advocating abdicates the exceptionalist posture to acknowledge that humans are animals, abandons the idealist image of the map for a realist position consonant with current conceptions of cognition,<sup>35</sup> and jettisons the representational idea so that at the very least the theory will be able to embrace maps that shape the landscape as well as describe it. It claims:

While the spatial operations required to construct a map are present in all adults of *Homo sapiens sapiens*, that, because maps (as distinguished from spatial competence), are social discourse functions, they:

- 1) don't come into being unless called for by a relevant communication situation; and,
- 2) only then if a conventional sign system exists in which to encode them.

These two conditions are not independent of each other, for sign systems do *not* develop for non-existent discourse

functions. What happens is that, as the map discourse function begins to define itself, it is piggy-backed onto previously developed sign systems, which the map discourse function then drives in a new direction.<sup>36</sup> Because the spatial competence to create maps is active in every adult, in the presence of other sign systems, maps are precipitated whenever called for by a communication situation. But unless they are embraced by the encysting social system and developed, they leave no progeny (they may be thought of in the same way that we think of genetic mutations). I believe such maps are widely evident in the historical record:

a) In the emission, when called for by Europeans seeking geographic information, of maps by natives who otherwise apparently lack a mapmaking tradition. This is widely attested to. Why didn't these natives have a mapmaking tradition? Because their society didn't call for it (they didn't need it). Then why could they produce maps when the social situation called for it? Because they were adult *Homo sapiens sapiens*. (If the mutation, the emitted map, is adaptive – in our case to the social system – it survives; if not, it dies, is not reproduced, doesn't develop.)

b) In the isolated examples of maps P.D.A. Harvey and others have documented in the European Middle Ages. *This is precisely the same situation*. As in the case above, such maps remain in the historical record only when made in more or less permanent media (most were probably made in the mudbanks along streams, or scratched on the pavement and scuffed out). The increase with time in the number of maps extant in the European record reflects the growth of a mapmaking society (it is not that the record is spotty, but that a discourse function was developing).

The mapmaking of the Marshall Islanders (and others) presents a transitional case. In these societies a protomapmaking tradition emerged to serve a relevant discourse function (that of teaching and signing membership in the fraternity of pilots), but did not develop (there was no differentiation of map types). Why not? Because the society didn't call for it. Such terminal systems must arise frequently.

Why should I think this? Because such things happen all the time in other developmental systems. (Using developmental systems comparatively is one of the advantages of abandoning the exceptionalist posture.) For instance, certain somatic cells don't merely replicate themselves, but also produce daughter cells capable of maturing along differentiated pathways (this is how one fertilized ovum can develop into the 200 *different types* of cells in our body).<sup>37</sup> Similarly, species both reproduce *and* differentiate themselves (in the transformation of coherent lineages through time *and* in the bifurcation of lineages). In a cultural domain, languages can be both reproduced (as Latin has been) *and* differentiated (as Latin was into Italian, French, Spanish, Catalan, and so on). The mapmaking of the Marshall Islanders might have led to differentiation if the development of their society had called

for it. In the event, it was subsumed by the mapmaking of European colonizers.

Mapmaking will not reproduce *and* differentiate itself absent a society of a certain size and complexity.<sup>38</sup> What size? I don't know, but I do believe we've reached a position from which we should be able to make a good guess. The Roman Empire was clearly turning into a mapmaking society: maps serving a variety of functions existed at a variety of scales, mapmaking was beginning to be professionalized, manuals had been generated.<sup>39</sup> I don't know if the society was map-immersed or not, but it was heading in that direction.<sup>40</sup> However, with the disintegration of the empire, the truncation of cross-Mediterranean trade, and the isolation brought on by invasions, Rome ... *disintegrated* (this is not commentary, this is literally what happened). As it split into smaller societies (*disintegrated*), in each of these the threshold required for mapmaking was crossed, and mapmaking ceased. As P.D.A. Harvey puts it, "Maps were practically unknown in the middle ages."<sup>41</sup> However, mapmaking did flare up here and there, as individuals and subcultures (especially navigators and theologians) contended with emerging discourse functions. Portolan charts fulfilled a discourse function similar to that of the Marshall Island *mattang*, *meddo*, and *rebbelith*, as the *mappaemundi* fulfilled that of the cosmograms in numerous cultures. As individual European societies grew, the threshold required for mapmaking was crossed again, and mapmaking ... *reappeared*. I think we have the evidence in the changing size of map archives from these periods to establish this point, and R.A. Skelton and P.D.A. Harvey's *Local Maps and Plans from Medieval England* provides the data for an acute analysis of this hypothesis in England.<sup>42</sup>

I would be willing to hypothesize that a really map-immersed society has to be a printing society. This is not because most of the maps made or used in such a society are printed (I am increasingly convinced from the ethnography of map use I am attempting that these are sketch products made and thrown away), but because it is through the production and dissemination of printed map artifacts that the map sign system is spread and developed.<sup>43</sup> In such societies people will grow up into such a system and will, when their individual maturation and development permits, emit maps in a regular way uncharacteristic of non-map-immersed peoples. Like Jeff and Chandler.

Is this theory right? *I don't know*. But on the basis of a couple of simple principles it promises to account for everything we know about maps. Certainly the focus on the map's discourse function is right (not what does the map *show* or *how* does it show it but *what does the map do? what does the map accomplish?*). And I feel confident about the potential for theorizing the map as a system of signs (because this so radically foregrounds the map as a *construct* of human knowing). Because I *assume*, on the basis of what we know about psychology *and* evolution, that all adult humans have the spatial competence

required to make maps, I don't have to *explain* Native Americans' sketching of river systems for European explorers (we might say it comes with the species); but because I insist on the existence of a relatively sophisticated sign system on which to erect map signing, I posit as a requirement for the emergence of a mapmaking society at least poised on verge of literacy. I think the absence of maps in most human societies reflects the daunting character of this requirement, not the failures of fieldwork to uncover maps, or their creation in perishable media. And I think the *limited* development of mapmaking among, *inter alia*, the Marshall Islanders and Australian Aborigines illustrates the extent to which the development of the map discourse function depends on the growth and elaboration of human social culture. I believe people for millions of years have emitted map, and maplike, and protomaplike artifacts as natural consequences of their spatial competence working itself out in the context of human discourse about the territory and what comes with it; but I also believe that most of these have been one shots, squibs, duds. Or they've made their point ... but no one noticed. In neither case did they lead to mapmaking. Not until the demands of agriculture, private property, long-distance trade, militarism, tribute relations, and other attributes of redistributive economies transformed the discourse environment in which these firecrackers exploded was the light they emitted apparent. But then maps must have seemed the answers to prayers (*why hadn't anyone thought of them before?*). (See Table 1, p. 60).

What would Brian Harley have said about this? Probably that I'm clutching at universal straws while drowning in generalizations. And maybe I am. Whatever my tone and the urgency with which I advance my case, this is not a war, but a dance. There is no history without generalization; there is no history without facts; there is neither without the other.

You say I am repeating

Something I have said before. I shall say it again.

Shall I say it again? In order to arrive there,

To arrive where you are, to get from where you are not,

You must go by a way wherein there is no ecstasy.

In order to arrive at what you do not know

You must go by a way which is the way of ignorance.

In order to possess what you do not possess

You must go by the way of dispossession.

In order to arrive at what you are not

You must go through the way in which you are not.

And what you do not know is the only thing you know

And what you own is what you do not own

And where you are is where you are not.

T.S. Eliot, *Four Quartets*, Harcourt, Brace, New York, 1943, p. 15.

## Notes

<sup>1</sup> This is a minimum requirement, but it is not easy to meet. The description of a transformation implies the description of

a form that is changed into another form. If we think of the forms as stages and the changes as transformations, we see that history is a theory of regularities in social life (stages) and the changes these stages undergo (transformations). The limitation to social life merely distinguishes history from biography (on the ontogenetic side) and evolution (on the phylogenetic side). This is not a necessary distinction (it is not logical), but etymological. I not only intend to argue that biography is embedded in history which is embedded in evolution, but that all three of these "historical scales" are characterized by a common structure. The simple listing of events in temporal sequence is more properly referred to as chronology.

<sup>2</sup> This long-term potentiation results in memories lasting from minutes to hours. Longer-term memory apparently involves *anatomical* changes at the same site, as well as in relevant sensory areas of the cortex. See Larry Squire, "Memory and the Hippocampus: A Synthesis From Findings With Rats, Monkeys and Humans," *Psychological Review*, 99(2), April 1992, pp. 195-231; and Eric Kandel and Robert Hawkins, "The Biological Basis of Learning and Individuality," *Scientific American*, 267(3), September 1992, pp. 79-86.

<sup>3</sup> This is not an argument about the preserving medium (the difference between paper and pencil and electronic storage is not at stake). What's important is that the expression is made in a medium which preserves it, which requires, therefore, the cultural elaboration required to create the preserving medium. What's at stake is ... *cultural elaboration*.

<sup>4</sup> Denis Wood, "What Makes a Map a Map," Yale-Smithsonian Material Culture Seminar on Maps, New York, 1993; *Cartographica*, 30(2 & 3), Summer / Autumn 1993, pp. 81-86.

<sup>5</sup> Why would this have been hard? Because interpolated information has an interference effect on the recall of previously encoded information. This "retroactive interference" means that Jeff's description of the second arena would have interfered with his auditor's ability to recall the first. There is also something called "proactive interference" in which prior information interferes with the recall of subsequently learned information. In the words of Gordon Bower and Traci Mann, "People's recall of some material can be reduced if before or after learning it they learn similar material. One set is said to 'interfere with' recall of the other, and more so the more similar the two sets." See their "Improving Recall by Recoding Interfering Material," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18, 1992, pp. 1310-19. What this amounts to is a description of one of the many reasons people inscribe maps: so they can make *visual* comparisons of the varying ways territories are linked to what comes with them.

<sup>6</sup> I deny that maps are, or constitute, a language. Rather, languages and maps are both examples of sign systems. Given this, both linguistics and cartography are branches of semiotic (or semiology), the theory of signs. Some cartographic theorists use "language" and "sign system" interchangeably, even when treating the map as a sign system. See for example C. Grant Head, editor, *Report on the First North American Working Seminar on the Concepts of Cartographic Language*, Wilfrid Laurier University, Waterloo, Ontario, 1988, p. 1. In general, though, the 11 theorists Head assembled agree that cartography has a struc-

ture that is semiotic, but not linguistic. For an opposing point of view, see J.H. Andrews, "Map and Language: A Metaphor Extended," *Cartographica* 27(1), Spring, 1990, pp. 1-19. I am interested in differentiating the cartographic and linguistic systems for two reasons: 1) They're different. Speech and writing are developed by a logic of concatenation: they're stringy, they unfold over time. (See especially Chapter 2 of George A. Miller's *The Science of Words*, Scientific American Library, New York, 1991, pp. 21-38, though the whole book is a genuine joy.) Maps, on the other hand, develop according to a logic of juxtaposition: they're "collage," they unfurl over space. 2) I believe that *writing* and *mapmaking* developed in parallel from simpler, antecedent sign systems (perhaps attempting to graphically encode speech, perhaps attempting to encode other things), that is, that less well articulated sign systems bifurcate into writing and mapmaking. (See my argument on pp. 42-47 and 143-81 in Denis Wood, *The Power of Maps*, Guilford, New York, 1992.)

<sup>7</sup> Colin Cherry, *On Human Communication*, MIT Press, Cambridge, 1957, p. 306.

<sup>8</sup> Here I am interested in distinguishing between the impulse that leads people to make maps *graphic* (for example, to permit *visual* comparisons among territories and the stuff that comes with them), from the impulse that leads people to make maps *permanent* (so that they can be *transported* from place to place, or *transmitted* from one generation to the next).

<sup>9</sup> Albert Kreiling, "The Chicago School and Community," *Critical Studies in Mass Communication*, 6, 1989, p. 318. This should not, however, be taken to imply that people can't, for example, draw maps to clarify situations for *themselves* (the "other" in Cherry's definition can be ... another state of the self), only that this personal mapmaking arises out of the whole world of the mapmaker (which is social). The instrumental quality of drawing this implies is the topic of a valuable paper by Daniel Herbert which insists that instead of being passive records, architectural study drawings actually *generate* information within the design task as the self interacts with the self in the "graphic process." Here the "other" to whom one looks for understanding is the self ("do I understand this? what do I make of this?"). But this "internal" character does not reduce its social reality. See Herbert's "Graphic Process in Architectural Study Drawings," *Journal of Architectural Education*, 46(1), September 1992, pp. 28-39.

<sup>10</sup> Brian Harley, "Texts and Contexts in the Interpretation of Early Maps," in David Buisseret, editor, *From Sea Charts to Satellite Images*, University of Chicago Press, Chicago, 1990, pp. 3-15; "Maps, Knowledge, and Power," in Dennis Cosgrove and Stephen Daniels, editors, *The Iconography of Landscape*, Cambridge University Press, Cambridge, 1988, pp. 277-312; "Secrecy and Silences: The Hidden Agenda of State Cartography in Early Modern Europe," *Imago Mundi*, 40, 1988, pp. 111-30; and "Victims of a Map," paper read at *The Land of Norumbega Conference*, Portland, Maine, 1988, p. 17. Harley and David Woodward make the point at length in the concluding "Social Contexts" section of the "Concluding Remarks" chapter in their jointly edited *History of Cartography, Volume One: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean* (University of Chicago Press, Chicago, 1987, pp. 506-9):



"Maps," they say, "are the products of decisions and actions taken by identifiable members of social groups in particular historical circumstances," though, adumbrating the concerns I raise immediately below, here *social* is opposed to *technical* ("maps have always been a social as well as a technical phenomenon," "the map's ability to fill social as well as technical roles"), as though technical roles were, somehow, not inherently social.

<sup>11</sup> Denis Wood, "How Maps Work," *Cartographica*, 29(3 & 4), Autumn / Winter 1992, pp. 66-74.

<sup>12</sup> For a description of this "new cartography" as such, see Tom Hopkins, "Lines of Power," *Equinox*, 63, May/June 1992, pp. 48-57, where he describes Harley as the "father of the new history of cartography." Hopkins captures Harley's immense attractiveness to anyone with a sense of social inequity.

<sup>13</sup> William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England*, Hill and Wang, New York, 1983.

<sup>14</sup> Harley, "Victims of a Map," p. 1 and p. 35.

<sup>15</sup> Brian Harley, "Can There Be a Cartographic Ethics?" *Cartographic Perspectives*, 10, Summer, 1991, p. 14.

<sup>16</sup> This is not a belief limited to cartographers: "Many architects ... consider study drawings not as generators or producers of information but as records of images previously conceived in the designer's mind," notes Herbert, "Graphic Process," p. 28. But Herbert demonstrates convincingly that what is really taking place are "cycles of graphic experiments," that is, "short-term elemental drawing cycle[s] of mark/interpretation/mark, etc., where the act of making each mark renews, expands and redefines the conceptual scope of the design task in progressive responses to the evolving composition on the drawing page" (p. 31).

<sup>17</sup> Not only is this "pre-given" quality of "reality" the crux of the problem with idealism, but representationalism as well. My position is indebted to the work of the neurophysiologists Humberto Maturana and Francisco Varela whose biology of knowledge is explicitly nonrepresentational. This is Varela in his new "Afterword" to the revised edition of their co-authored *The Tree of Knowledge: The Biological Roots of Human Understanding* (Shambhala, Boston, 1992): "Representationalism can take many forms, but they all share the same idea as a common denominator: that knowledge is based on acquiring or picking up the relevant features of a pre-given world that can naturally be decomposed into significant fragments. In the common parlance of the neuroscientist, this process is encoded in familiar phrases such as 'recovering information in the signal' and 'acting in an adaptive manner.' This puts the burden of knowledge on pre-given items in the world and leaves no place for the creation of the significance and meaning proper to the autonomy of the living. When these living qualities are put back into our field of view, what we conclude is not the mere negation of representationalism – namely that the organism invents or constructs its own world at whim – but, more interestingly, that animal and environment are two sides of the same coin, knower and known are mutually specified" (pp. 252-53).

<sup>18</sup> For this and the discussion that follows the key sources remain, Jean Piaget and Bärbel Inhelder, *The Child's Conception of Space*, Routledge & Kegan Paul, London, 1956; and Monique Laurendeau and Adrien Pinard, *The Development of the Concept*

*of Space in the Child*, International Universities Press, New York, 1970.

<sup>19</sup> What language and other sign systems permit is not expression, but thinking. Miller, *The Science of Words*, puts this beautifully when he says, "The evolution of language enabled many individuals to think together" (p. 2). The implication is that thinking is a social activity, not an individual one. As indeed it is.

<sup>20</sup> Since language and mapmaking are, if different, coeval, Humberto Maturana's strictures about our "awareness" of language should apply with equal force to our awareness of mapping. Unfortunately, these are not simple, but in a phrase, "language is not in the brain or in the nervous system, but rather in the domain of mutual coherences between organisms," where I would want to change "language" to "mapping" and "organisms" to "environment" (Humberto Maturana, "Everything Is Said By an Observer," in William Irwin Thompson, editor, *Gaia: A Way of Knowing*, Lindisfarne Press, Great Barrington, Massachusetts, 1987, p. 81). This argument was first developed in Maturana's pathbreaking, "The Neurophysiology of Cognition," in Paul Garwin, editor, *Cognition: A Multiple View*, Spartan Books, New York, 1970, pp. 3-23.

<sup>21</sup> That is, they vary with the function they fulfil in human discourse. A function, of course, is a correspondence scheme that assigns to each element of one domain a specifiable element of another (see the definition in Earl Swokowski's *Calculus of a Single Variable*, Prindle, Weber & Schmidt, Boston, 1991, p. 14). In our case, the assignment is from a domain of *human discourse* to the domain of the *physical environment*. This broader use of "function" was pioneered by Vladimir Propp in his *Morphology of the Folktale* (University of Texas Press, Austin, 1968) where a function was defined as "an act of a character understood from the point of view of its significance for the course of the action," which is basically the idea I have here (substituting "map" for "act of a character" and "life" for "course of the action"). See also Roland Barthes' treatment in the "Structural Analysis of Narratives," in his *Image-Music-Text*, Hill and Wang, New York, 1977, pp. 79-124.

<sup>22</sup> For this see my review of Harley and Woodward's *History of Cartography, Volume 1*, in *Cartographica* 24(4), 1987, especially pp. 71-74.

<sup>23</sup> Barbara Belyea, "Images of Power: Derrida/Foucault/Harley," *Cartographica*, 29(2), Summer, 1992, pp. 1-9.

<sup>24</sup> Mary Douglas, "The Meaning of Myth," in Edmund Leach, editor., *The Structural Study of Myth and Totemism*, Tavistock, London, 1967, p. 49.

<sup>25</sup> Ibid.

<sup>26</sup> It may be debated whether Derrida should be accounted a structuralist or not, but this would be to split hairs. Central to his program is an encounter between phenomenology and structuralism and G.C. Spivak, the translator of *Of Grammatology*, terms Derrida "a grammatological structuralist historian of philosophy" ("Translator's Preface" to Jacques Derrida's *Of Grammatology*, Johns Hopkins University Press, Baltimore, 1976, p. lv). The same doubt may be entertained about Foucault. Philip Petit claims that Foucault explicitly disavows structuralism (Philip Petit, *The Concept of Structuralism: A Critical Analysis*, Uni-



versity of California Press, Berkeley, 1975, p. 69), but this is not how I understand the passage in question which reads, "My aim is not to transfer to the field of history, and more particularly to the history of knowledge (*connaissances*), a structuralist method that has proven valuable in other fields of analysis. My aim is to uncover the principles and consequences of an autochthonous transformation that is taking place in the field of historical knowledge. It may well be that this transformation, the problems that it raises, the tools that it uses, the concepts that emerge from it, and the results that it obtains are not entirely foreign to what is called structural analysis. But this kind of analysis is not specifically used" (Michel Foucault, *The Archaeology of Knowledge*, Pantheon, New York, 1972, p. 15), which seems to me to say that despite his method the transformations, problems, tools, concepts and results are structural.

<sup>27</sup> In general see Richard and Fernande DeGeorge, *The Structuralists from Marx to Lévi-Strauss*, Anchor Books, Garden City, New York, 1972. For particular arguments see, Marshall Sahlin, *Historical Metaphors and Mythical Realities: Structure in the Early History of the Sandwich Island Kingdoms*, University of Michigan Press, Ann Arbor, 1981, especially the first and fourth chapters; Claude Lévi-Strauss, *Structural Anthropology*, Basic Books, New York, 1963, but almost everything he's written has been structuralist in character and intention; Roland Barthes is most systematically structuralist in, *The Fashion System*, Hill and Wang, New York, 1983; Noam Chomsky, *Syntactic Structures*, Mouton, The Hague, 1957; Roman Jakobson and Morris Halle, *Fundamentals of Language*, Mouton, The Hague, 1956; Ferdinand de Saussure, *Course in General Linguistics*, Philosophical Library, New York, 1959; Jean Piaget, *Structuralism*, Basic Books, New York, 1970 (but his entire psychology is structuralist); A.G. Tansley, "The Use and Abuse of Vegetational Concepts and Terms," *Ecology*, 16, 1935, pp. 284-307; and for Marx, first of all, his and Frederick Engels' *The German Ideology*, International, New York, 1970, but also, *inter alia*, Louis Althusser and Étienne Balibar, *Reading Capital*, Pantheon, New York, 1970, and Jonathan Friedman, "Marxism, Structuralism and Vulgar Materialism," *Man*, N.S. 9, 1974, pp. 444-69.

<sup>28</sup> M. J. Blakemore and J. B. Harley, *Concepts in the History of Cartography: A Review and Perspective*, (Cartographica Monograph 26), *Cartographica* 17(4), Winter, 1980, p. 19.

<sup>29</sup> Harley and Woodward, *History of Cartography, Volume 1*, pp. 502-6, but especially, p. 504 ("there is no evidence to support an evolutionary maturing of the different concepts") and p. 505 ("there is little in this volume to support the notion that development ... was straightforward or cumulative in nature").

<sup>30</sup> Blakemore and Harley, *Concepts*, p. 19.

<sup>31</sup> *Ibid.*

<sup>32</sup> *Ibid.*, pp. 22-23.

<sup>33</sup> See, for example, Jared Diamond's recent discussion of the disappearance of pre-existing elements of material culture among Tasmanians due to the isolation from Australia they experienced when the land bridge across Bass Strait was drowned some 10,000 years ago. Here's a group that clearly "abandoned" (Jared's word, I would prefer "lost"), *inter alia*, the bone tools essential for fastening hides into cloaks, as well as the eating of fish which had once accounted for 10% of their caloric intake. While distancing

himself from Rhy Jones' assumption of Tasmanian intellectual degeneration, Diamond is explicit about the cultural devolution he describes. This distinction between cognitive capacity and social development is identical to that I am making in this paper (Jared Diamond, "Ten Thousand Years of Solitude," *Discover*, March 1993, pp. 48-57).

<sup>34</sup> *Ibid.*, p. 23.

<sup>35</sup> Nor, in abandoning idealism will it be necessary to join the ranks of Maturana, Varela, Derrida or Foucault. The perceptual psychologist, J.J. Gibson, provides another route to the same destination. See especially his "New Reasons for Realism," in the posthumous collection of his essays, *Reasons for Realism*, Lawrence Erlbaum, Hillsdale, New Jersey, 1982, pp. 375-84.

<sup>36</sup> I have tried to describe one occurrence of this process in my history of hillsigning. See my *The Power of Maps*, pp. 145-54. Barbara Mundy has recently critiqued my understanding of Mixtec hillsigning (personal communication, 1993); and if she's right the sequence advanced by P.D.A. Harvey of 1st) *symbols* then 2nd) *pictures* then 3rd) *surveys* might be a more fruitful way to theorize this history than that vouchsafed by my Wernerian orthogenetic polarization. I remain to be convinced that my reading of the Mixtec history is wrong, but in any case see Harvey's *The History of Topographical Maps*, Thames and Hudson, London, 1980. He compares the relationship between our approaches explicitly on p. 26.

<sup>37</sup> Cells with this capacity are known as pluripotent stem cells. In hematopoiesis such cells can give rise to erythrocytes, platelets, neutrophilic granulocytes, macrophages, activated T-cells, memory B lymphocytes and plasma cells. I think cadastral maps, surveys, Ptolemaic maps, are like pluripotent stem cells, whereas South Sea Island stick charts are like liver cells, able to reproduce themselves, but not differentiate.

<sup>38</sup> Why do I focus on size? Because growth that is not accompanied by differentiation and hierarchic integration and subordination will reach a limit beyond which it collapses. Therefore continuous growth can usually be taken as a measure of both growth and change in the complexity of organization. See John Tyler Bonner's *The Scale of Nature*, Harper and Row, New York, 1969; and Thomas McMahon and John Tyler Bonner's *On Size and Life*, Scientific American Library, New York, 1983. But it's a large literature ...

<sup>39</sup> O.A.W. Dilke, *Greek and Roman Maps*, Cornell University Press, Ithaca, 1985.

<sup>40</sup> "Map-immersed" is a term I introduced in "Maps and Map-making," in *Introducing Cultural and Social Cartography* (Cartographica Monograph 44), *Cartographica*, 30(1), Spring, 1993, pp. 1-9, to distinguish a map-rich society like ours, from map-poor societies like those of the Tzotzil in southern Mexico. See also my *The Power of Maps*, pp. 34-38.

<sup>41</sup> P.D.A. Harvey, *Medieval Maps*, University of Toronto Press, Toronto, 1991, p. 7.

<sup>42</sup> R.A. Skelton and P.D.A. Harvey, *Local Maps and Plans from Medieval England*, Oxford University Press, Oxford, 1986.

<sup>43</sup> In his "Commentary: On 'The Consumer's World: Place as Context' by Robert Sack" (*Annals of the Association of American Geographers*, 80(1), March 1990), Joshua Meyrowitz puts it this way: "The rise of modern society is supported by, and further

supports, the spread of literacy. Not only are print factories the prototypes of all mechanized production, but print helps to establish world markets, to disseminate the plans and ideals of capitalism," and so on (p. 129).

TABLE 1. SKETCH OF THE RELATIONSHIP AMONG HUMAN SPATIAL COMPETENCE, TRANSFORMATIONS OF SOCIAL STRUCTURES, AND MAPMAKING

Relationship of Spatial Competence, Social Transformation and Mapmaking		
Spatial Competence	Social Transformation	Mapmaking
Has the competence to make maps	Lacks graphic sign system	No maps are made
Has the competence to make maps	Development of graphic sign system	Spontaneous emission of maps (which neither reproduce nor differentiate)
Has the competence to make maps	Social growth and development	Emergence of maps fulfilling single discourse function (which is reproduced but which fails to differentiate)
Has the competence to make maps	Continued growth and development	Society becomes map-immersed

**Résumé** Les efforts de Brian Harley pour réformer l'histoire et la théorie de la cartographie étaient voués à l'échec à cause de son incapacité à transcender l'idéalisme et le courant représentatif acceptés comme pensée dans le domaine. Son vigoureux empirisme britannique ne l'avait pas aidé *non plus* à comprendre les penseurs du Continent qui l'ont ébloui et inspiré. Toutefois, ce qu'il voulait était vital : une cartographie proactive, représentant la conscience perceptive que seule une histoire vivante et honnête pouvait procurer, une conscience qui pourrait saisir la possibilité d'imaginer la cartographie comme étant objective, sans valeurs ... aujourd'hui.

**Zusammenfassung** Die Bemühungen Brian Harleys, die Geschichte und Theorie der Kartographie umzugestalten, waren zum Scheitern verurteilt durch seine Unfähigkeit, sich von dem Idealismus und der Begrifflichkeit zu lösen, die in der Branche für Nachdenken gehalten wurden. Sein standhafter britischer Empirismus half ihm auch nicht, die kontinentaleuropäischen Denker zu verstehen, die ihn blendeten und inspirierten. Was er jedoch wollte, war wesentlich: eine proaktive Kartographie, die das Selbstbewusstsein verkörpert, das nur eine ehrliche, lebensechte Geschichte liefern kann, und welche die Möglichkeit ausschliesst, die Kartographie heutzutage als vorurteilslos und wertfrei anzusehen.