HOW DO WE MAP THE GEOGRAPHIES OF CARTOGRAPHY?

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Abstract
We argue that scholars should begin to pay more attention to the geographies of cartography, showing why this matters and how this project might proceed methodologically. For most of the twentieth century mapping has been seen primarily as technical: research has focused on production, or the more cognitive aspects of use. Meanwhile digital mapping, advances in data collection technologies and radically different delivery media of online cartography have eclipsed all other cartographic formats. A richer diversity of interactions between maps and people is now possible and the places in which mapping is actively employed are wider than ever before. The last few decades have also witnessed important philosophical challenges to the 'cartographic project'. Historians of cartography have reoriented their research towards the mainstream of more critical social sciences and adopted a much more cultural and political emphasis. Critical research tends, however, to ignore the diversity of contemporary cartographic media and underplay everyday mapping practices. Significantly, it has often been researched as a strangely placeless and disconnected activity, ignoring the geographies of cartography.

This paper explores possible ways forward for a much more ethnographic and textual approach to contemporary mapping, which emphasises the unique, embedded relations between culture and mapping practice in particular times and places. The key questions it addresses concern links between mapped themes, scales, representational practices, technologies, consumers and producers in specific institutional contexts. It focuses upon a case study of maps deployed by Anglo-American academic geographers in their research and teaching. Geography as a university discipline has always 'enjoyed' a rather ambivalent and mutable relationship to the map. Distinct geographies of cartography have emerged in places of scholarship in different ways, which are recorded in diverse kinds of evidence.

Almost all research into geographies of cartography to date has relied upon printed secondary evidence. Researchers have focused on published articles, or changing

emphases of textbooks or undergraduate curricula. Others have examined the topical variation in submitted PhDs, or of research funding. The numbers of academics with particular research interests has also been charted. The advantages and drawbacks of this kind of approach are considered. In addition to these metrics-based accounts, a more nuanced ethnographic approach offers, we argue, an alternative way to chart the contours of the geographies of cartographies. In-depth interviews and story-telling can be used to investigate local histories of changing mapping practice. The places associated with mapping can be explored. Laboratory-based research and teaching practice can be observed. Different kinds of teaching in lecture theatres and seminars deploy map images in a variety of ways. The use of the medium in exhibitions, on home pages or offices walls can be recorded. Production of mapping as illustrations in cartographic units can be observed and the uses of map libraries witnessed. Across many places then a thick description of the everyday practices of mapping in university research can be constructed. .

We conclude that these contrasting approaches enable different explanations for geographies of cartography, in which local intellectual, institutional, social, methodological, technological and political explanations for the places of mapping can be evaluated to help us build a richer contemporary understanding of mapping practice.

1. Introduction: the need for contextual research

For most of the twentieth century mapping has been seen primarily as a technical endeavour. Research has focused on 'improving' production, or the more cognitive aspects of use. Mapping practices have been assumed to be predictable, knowable, individual and asocial. Scientific explanations of mapping processes have predominated with research separated from the real world of production, or tied to R&D needs of specific mapping agencies and GI corporations. Universal explanations for almost all aspects of mapping are possible if this kind of ethos predominates. Context is irrelevant or else controllable and a longer-term teleological goal of optimised results and products is paramount.

There are clearly powerful forces encouraging this kind of approach that are also strongly aligned with a trend towards uniformity. Technological change in the late twentieth century has led to an increasingly globalized world of mapping (Rhind, 2000). Data sources are becoming more standardized. The ready availability of high-resolution overhead imagery has reduced the need to compile local databases or mapping (see Dodge and Perkins, 2009, for a series of papers evaluating the significance of these developments). Economic globalisation has led to the growth of a global market in data sources. Meanwhile digital mapping has usurped the single format hard copy published map. Instead there is a targeted range of products, often oriented to particular market niches, and automatically sourced from combinations of affordable and available data. Moreover, the internet has seen global products increasingly networked, with online portals and virtual globes under the control of a handful of multinationals offering

increasingly standardized and 'bland' worldviews such as Google Maps to a global audience (Kent, 2009a).

In 1991 one of the authors heard Nick Chrisman deliver a fascinating paper to ICA in Bournmouth that implicitly challenged this orthodoxy. Chrisman argued that there are very distinctive 'geographies of cartography' and product ranges, that might be strongly correlated with local cultural contexts. He speculated that the graphic style of Soviet mapping reflected many years of a collective ethos of production. In contrast Swiss mapping emphasized topographic concerns of a small steep country, whilst US mapping styles emulated the American dream of mobility. So national 'styles' are not universal, they are strongly tied to particular places and times, and play an important role in the geographical imaginations of different places (Anderson, 2001).

Subsequently researchers have focused on different kinds of mapping and reached similar conclusions, in detailed empirical studies of the specifications of different maps (see for example Morrison (1994) on the unique design characteristics of French urban transport mapping, or Nicolson (2004) on stylistic variation in European cycling and motoring maps). Clearly aesthetic differences in product ranges could be discerned towards the end of the era of fixed-format hard-copy topographic mapping. Indeed it has recently been argued that there are still national variations in aesthetics in the digital era, and that despite trends towards uniformity design differences are still apparent (Kent, 2009b).

Clearly there are forces towards uniformity, but also towards local variation in cartography. However researching the geographies of cartography ought to involve more than asking questions about the graphic design specifications of mapping.

The form of the cartographic product, its visual qualities and scale, what is mapped and how it is mapped are clearly important. So is the organizational context, and the ways in which the mapping is called into being through different technological modalities. Organizational culture and remit respond to outside pressures and are mutable not fixed. Technology changes and disseminates in an uneven fashion through the neo-liberal global economy. The people involved in the mapping process, and the tasks in which they deploy cartography also strongly affect the roles played by the map in society. The particular social, political, environmental, cultural and economic contexts are all important, but it is the links between these factors that together constitute the unique geography of mapping. The flows between actors in this socio-technical network affect how mapping works and moving information, images, words, numbers, material objects and finance characterize the immanent actor-network of all contemporary mapping.

This field of study is of course also strongly associated with the place being mapped and with the time when the mapping is being carried out. Mapping practices in 2009 are probably more varied than ever before, with a greater diversity of tasks in which mapping plays a role. The same technological changes that facilitated standardization

have also encouraged new kinds of local variation, and new subjectivities, to such an extent that it can be argued that geographies of cartography perhaps matter more now in the era of democratized cartography, Web 2.0 and the map mash up. Mapping is itself increasingly mobile, animated and embodied. Users are producers. We can map ourselves and see ourselves moving on our own maps. The spaces in which maps are deployed themselves influence the kinds of meanings that might be derived from the mapping process (see Del Casino and Hanna, 2005).

Thinking about mapping is also mutable and placed, responding to, but also influencing other factors in the mapping world. A social constructivist orthodoxy now pervades research into the history of cartography, inspired by the influential work of Brian Harley and scientific orthodoxy in thinking about contemporary mapping is increasingly being challenged by a plethora of new and critical approaches. On one level mapping may still function as a truth bearer, and practical tool, but is increasingly being rethought as representation, social construction, inscription, hybrid, proposition, actant and practice (see Dodge et al, 2009 for a recent collection). Careful reading of how mapping is deployed suggests the ontological fixity of the image is no longer tenable (Kitchin & Dodge, 2007). Instead it is persuasive to regard maps as called in to being to do different kinds of work according to contingent contexts, which change over time, place and according to the medium through which they are interpreted.

So there are persuasive arguments for a rigorous series of investigations into how mapping is deployed in different contexts. But before this work can begin we need to establish the best ways of investigating geographies of cartography.

2. Methods

Research into the geographies of cartography is likely to deploy a very wide variety of different methods, because of the changing times, technologies, and critical rethinking outlined above. Some of these approaches will continue to involve carefully controlled scientific experiment, with generalizable data, and a strongly quantitative emphasis. Suchan and Brewer (2000) however, focus in particular on some of the ways in which qualitative approaches have begun to be used by researchers in cartography, and it is our contention that the diversity of mapping contexts and practices almost certainly require researchers to use multiple qualitative methods, involving detailed case evidence of process. Suchan and Brewer (2000) distinguish data sources into documents, verbal sources (such as questionnaires, interviews, focus groups, oral histories and verbal protocols) and direct observational data, before exploring how these sources might be described, analysed and interpreted. However ethnographic methodologies differ significantly from textual approaches. Suchan and Brewer significantlyunderplay the many different analytical approaches that may be used and largely ignore the special case of how to analyse the visual (see Rose, 2007). We argue, after Law (1999), that we should both follow the actors and trace the inscriptions they leave behind, since it is these 'texts' that stabilize work and allow ideas to be moved across distances. The

remainder of this paper therefore explores the nature of textual research and of ethnographic methods, before applying these to the special context of academic geographers and their mapping practices.

2.1 Textual approaches

Almost all research into geographies of cartography to date has relied upon printed secondary evidence (see Table 1). The majority of empirical investigations have investigated particular kinds of published maps, describing attributes of the visual cartography, but the analysis of these sources in isolation of other inscriptions left behind by actors is likely to be trivial: it is the rich context revealed in multiple transcriptions that throws light on the social significance of the work achieved by mapping. For example examining changing Ordnance Survey symbology alone is unlikely to offer rich insights, unless it is combined with a consideration of changing organizational and government policy, map reviews, other research, archival evidence of the decision-making process, marketing policy, an analysis of transcripts of interviews with relevant actors and a broad appreciation of the context in which the symbols are deployed. Other examples may require different combinations of sources.

Table 1: Possible sources for textual analysis of mapping

Maps
Published words about mapping
Policy documents relating to mapping
Annual reports of map producing agency
Mass media and journalistic accounts of mapping
Archival records
Internet chat logs
Narrative accounts of mapping in letters, diaries, novels, poems etc
Curricula
Published research
Textbooks
Marketing materials
Web served
Hard copy
Television
Interview transcripts
Focus group transcripts
Visual depictions of mapping
Art,
Photographs
Cartoons
Films and video
People
Gestures and non verbal communication
Behaviour and practices
Objects
Spaces

Choosing an analytical technique depends on the nature of the text to be analysed but also upon the modality through which meaning is constituted, and the sites where the

text is deployed, be it the text itself, the institutions through which its work is done, the sites of its production, or the audiences deploying the text (Rose, 2007). A multi-method approaches are most likely to generate richest results. For example indices of world mapping quality were compiled by Parry and Perkins (1997) drawing upon extensive questionnaire research, compared to Web-sourced data and analysis of global published output. Here the emphasis was upon moving on from crude indices of quantitative scale coverage and metrics such as percentage coverage to a more nuanced evaluation of a multi-factorial mapping quality, informed by an analysis of the mapping but also of the organizational context in which it was released.

Content analysis may be an appropriate technique, and offers a wide and representative description of data that can be applied to speech, visual sources like maps, interview transcripts and written texts (see Collins-Kreiner, 1997). It counts the frequency of different elements in the source, establishing a rigorous coding process for reducing the complexity of a source to a manageable series of elements that can then be analysed. The weakness of content analysis is that it rarely considers wider contexts or offers explanations for the trends it identifies.

In contrast a very large variety of different *semiotic approaches* focus on the meaning of the source material. For example Wood (2002) argues that codes in mapping allow interests to be articulated within the map and during the deployment of the image. These may be read and meaning unpacked. Subsequent work has explored the relation of map itself to what Wood and Fels (2008) call the paramap, comprising other devices in the map sheet and interpretive material that allows the meaning of the map to be fixed socially. The problem of this kind of semiotic approach is in establishing the validity of the image to be deconstructed, and the diverse, contested and complex terminology of semiology.

A *hermeneutic approach* to mapping moves beyond the sign systems to offer interpretation of the image, in relation to interpretive canons. Often combined with semiosis it brings wider cultural concerns into the reading (see Pickles, 2004). Of course it is very difficult to offer a rigorous and repeatable hermeneutic methodology.

More **discursive** textual approaches are inspired by Foucauldian notions of the operation of different discourses as forms of power knowledge. Here the emphasis of an interpretation shifts towards the political work of the mapping and away from any literal or individual meaning of the map symbols or the map as a whole. They are more likely to consider the organizational, cultural and political context around the map and reflect on how visual discourse helps construct a subject who might be governed (see Joyce, 2003).

2.2 Ethnographic approaches
A turn towards performance has increasingly taken place across humanities and social scientific disciplines. (Perkins, 2009). Research is starting to employ ethnographic

approaches to carry out empirical investigations of everyday mapping practices in the field. An ethnographic approach sees mapping as a social activity, rather than an individual response. Observation may be overt, or covert, or may be combined with an explicit recognition of the participative role of the researcher in the process. By observing and participating in the performances around mapping we can explore its relations to identity, how different spaces are co-constructed, and the ways in which people behave when carrying out mapping tasks. Ethno-methodological work is beginning to yield rich descriptions of the actions preformed in, and around, the mapping process. Brown and Laurier (2005), for example, chart the social use of mapping in everyday car and tourist navigation activities, in which the mapping process is cast as a complex negotiation of identity in a social context. Map reading depends upon the context of the task: ethno-methodological observation reveals much more at stake than individual cognitive map reading.

Previously taken-for granted social actions and interactions in the field can be recorded, revealing complex everyday behaviour. Film, video, or photo diaries can then be coded, translated and interpreted, often using textual analytic techniques discussed above, and a rich empirical exploration of actions becomes possible, if the researcher is deeply immersed in the mapping context. Situated and locally contingent ways of approaching mapping also depend on auto-ethnographic methods and a reflexive appreciation of the role of the researcher in practice which can be informed by the use of video diaries and observations or researcher interaction.

3. The Place(s) of Cartography in Geography

There is already a large literature charting the changing but often ambivalent relationship of mapping to the discipline of geography (see Dodge and Perkins, 2008 and Perkins, forthcoming). In the UK a retreat from mapping has been traced, in which geographers seem to have become less involved in all aspects of mapping. There has been a decline in the number of empirical studies published in mainstream geographical journals that depend on mapping as a medium for displaying results. Even specialist fields that used to deploy mapping as a central part of their arguments have reacted against using the medium. Over the last 18 years the vast majority of articles for example in the journal *Political Geography* have not included a map (Perkins, forthcoming).

Deploying this kind of content analysis on published literature allows the crude outlines of a retreat to be marked out. Content analysis of other data sets offers corroborating evidence. A wider range of elite publications also reflect this trend. The 2008 *Research Assessment Exercise* (RAE) in Geography in UK academia arguably presents one of the most useful barometers of elite discourse in the field. A quantitative analysis of these data supports evidence for a decline. Very few maps illustrate items submitted by human geographers in the returns. Other indices are also there to be counted. There is

scope for a wide ranging content analysis of changing themes in published research literature relating to mapping (see Gilmartin, 1992, for an earlier comparable study). Few PhDs now focus on mapping. There are not many geographers employed in the UK who list their research interests as being concerned with mapping. Map libraries and drawing offices with professional cartographers in universities have shut across the UK academy. Courses offering a professional training for cartographers in UK Geography departments have also shut in the last decade (see Forrest, 2003 and 2007).

However, when other methods are deployed a rather different picture emerges. Looking at the wider social context outside of academic geography reveals a striking contrast. Mapping is more popular than at any period in the history of cartography, with DIY cartography increasing apace. Open-source collaborative cartography involves people in mapping in new ways, making and sharing maps through projects like OpenStreetMap.org. The figure and metaphor of mapping is increasingly deployed by artists working in many different fields, from representational art, through conceptual and live art practice. Film is closely associated with the mapping impulse and the imaginative worlds of fantasy literature are strongly associated with maps of imagined terrains across which protagonists journey. And public perceptions of the academic discipline still associate Geography with mapping.

The retreat in academic Geography in the UK has been explained by the fact that mapping practice in the discipline became subsumed, in large part, into GIS with cultural considerations of the visual and aesthetic marginalized in the quest for analytical sophistication, but evidence for this claim is circumstantial. As is the observation that the cultural turn in geography has seen a greater preoccupation with theory pushing out mapping (Dodge and Perkins, 2008). Painter's observation (2006: 346) that '*[w]e knew geography was theoretically sophisticated, politically engaged and socially committed, but everyone else thought it was about maps. So we suppressed our cartographic impulses and as the cultural turn took hold our desire for mapping was obscured by our mappings of desire*' may be astute and succinct, but may well portray a rather over-generalized explanation. An ethnographic approach and qualitative exploration beyond the publication of mapping is likely to reveal interesting local differences from the apparent pattern counted in the limited published analysis of literature and hard data. In some disciplinary spaces of Geography mapping is alive and flourishing. On the walls of staff offices maps are proudly displayed. They adorn posters presented at conferences. Map exhibitions attract widespread fascination. Home pages map our disciplinary place in the world.

Nor has the apparent retreat been even across the UK. Some geography departments continue to teach and research mapping, and within individual geographical spaces across the county mapping is still an important part of geographical practice. An examination of these hidden spaces beyond the obvious bounds of published output, documented staff interests, or courses is likely to reveal a map-rich geography (see Lorimer and Spedding, 2002). We need to explore the oral histories of iconic figures

who have taught and researched throughout the last 40 years. We need to investigate different mapping stories. We need to observe how geographers use maps in lectures and ask what role the images play for lecturers and audiences. Does it inherently still appeal, or is it perceived as a rather tedious and limited icon for place? We need to participate with students making maps in our computer labs, and watch the ways they deploy mapping on other devices. We need to interview journal editors and key gatekeepers about their attitudes to the medium in parallel to more systematic and wide ranging content analysis of a proper sampling of data. We need to monitor web-based logs of users accessing online services and interview these people about their mapping. We need to watch people making maps in drawing offices and using maps in different disciplinary spaces like Map Libraries and seminar rooms. We need to relate these data to the wider social and cultural context of education in the UK, exploring change and weighing up different explanations in a thick description of everyday practice.

This kind of project can be juxtaposed to geographies of cartography in different national contexts to offer a model for a multi-method and critical examination of the changing mapping culture which could usefully be applied to other genres and places. Mapping is always situated, should not mapping research be placed as well?

4. Conclusions: towards the geographies of cartography

In this paper we have argued strongly that the complex nature of mapping in 2009 needs to be approached from a number of different standpoints and that a single method risks simplifying a complex network of associations, practices, artefacts, organizations, technologies and social contexts. We conclude that a cultural approach is needed which encompasses different explanations for geographies of cartography, in which local intellectual, institutional, social, methodological, technological and political factors are associated with particular places of mapping. Our case study of the geographies of cartographic practices in and around the discipline of cartography shows the importance of this kind of situated understanding of the production and deployment of cartographic knowledge. It is to be hoped that case studies like this will help us to build a rich contemporary understanding of mapping practice, that will inform future research agendas of the *ICA Commission on Maps and Society*.

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