The Cartography of the Recent Past

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Geographers and map-makers are not primarily concerned with the past. This has been the domain of historians and of archivists who ensure the preservation of records which satisfy historians' needs. And yet map-makers have a valuable contribution to make in this field. The object of cartography is to represent graphically and to scale scientifically collected data about the world or other celestial bodies. One might assume that the only link between cartography and history is the intellectual content of maps which has changed over time and which is studied by cartographic historians. But map-makers are key figures in another aspect of the history of cartography, one which may be overlooked unless cartographic historians, map curators and archivists are sensitive to it. That is the history of map-making technology in the recent past.

What is mean by the "recent past"? It is clearly a time in history which constantly changes, for as time goes by the dates of the recent past change. It might be thought of as the last fifty years or so—say the working life of a map-maker, or it could be considered to stretch as far back as the beginning of this century. In fact, the precise time span is not critical: what is important is its link with the present. For the purposes of this discussion, the "recent past" is intended to refer to this century. Although it is close to us, there are a number of difficulties in examining the recent past. By our very proximity to it we lack the advantages of the long perspective which we enjoy when studying earlier periods in history. It is not easy to discern significant trends and the implication of changes, simply because we are so close to them. Also, there may be real limitations in obtaining necessary information, not the least of which can be problems arising out of the confidential nature of source material while it is of current interest.

The difficulties are balanced by a number of factors which suggest that map-making in the recent past could be satisfactorily documented. To consider the challenge in a positive light, there are many ways in which collecting in the recent past is less onerous a task than collecting and researching information of the previous century. Individuals who witnessed technological developments in map-making in the first half of this century are still alive. The availability of printed

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information about map-making in this century is much greater than for previous centuries. Records of cartographic organizations may still survive and may therefore be candidates for permanent preservation in archives. The vigour and skill now applied to the study of the history of cartography could be applied, with appropriate methodology, to the area of cartographic technology. A study of the technology of map production will bring about closer ties between groups which seldom meet although they share a mutual interest in cartography. The history of cartography is a well-developed field supported by scholarship of the highest standards.

Cartographic curators and archivists have worked closely with historians to ensure the preservation of significant cartographic works. Map production is a field occupied by practitioners who include craftsmen, scientists, artists, designers and technicians among their numbers. The contact between practitioners and scholars has been minimal. Interaction among these groups, however, should result in a more complete picture of map-making than could be constructed otherwise. Most often documents are preserved because of their informational content, but an inter-disciplinary approach might result in the preservation of maps which are selected as representative products of technology. In addition, the thorough documentation of the history of map producers and the preservation of information and artifacts relating to the technical aspects of map-making might be achieved.

The maps of the recent past are themselves often sadly neglected. They are considered merely old, that is, already outworn and out-dated, not yet endowed with the value of venerated antiques. To many they seem about as worthy of study as yesterday's newspaper and it is usual to find them high on the list for waste disposal. The information they carry is not current enough to be useful today or old enough to tell us about the distant past. Owing to the transient nature of the information they contain, maps, unlike books, are very quickly considered ephemeral and not worth keeping.

In his excellent study of road maps, Walter Ristow seems to have isolated the very first oil company give-away road map, a 1913 map of part of the United States. And yet he comments, "the 10,000 maps of Allegheny County distributed by mail (probably in late 1913 or early 1914) were apparently put to good use, for no copies have survived! There are none in Gulf's archives or in the collections of the Library of Congress."[1] Any archivist or curator who deals with maps could readily name other such unfortunate gaps in cartographic collections.

Not only individual map sheets, but also broader undertakings such as atlases and map series are cartographic forms suffering from similar neglect. The recovery of information about map series of the last century is being carried out. Witness the brilliant work done, for example, by Clark and Mumford in their investigations of early editions of the 1:63 360 map series of the Ordnance Survey of Britain.[2] Nevertheless, in the meantime map series and atlases are being conceived, created,

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1 W.W. Ristow, "A Half Century of Oil Company Road Maps", *Survey and Mapping*, Vol. XXIV (December 1964): 624.

2 P.K. Clark and I. Mumford, "Engraved Ordnance Survey One-Inch Maps, The Methodology of Dating," *The Cartographic Journal*, Vol. 5 (December 1968): 111-114.

used and lost. No adequate records of their lineage, or the circumstances of their production or their specifications have been retained. Cartographic historians of the future will be obliged to spend a great deal of time and perform near miracles in order to rebuild a satisfactory picture of contemporary map production.

Although the odds are against the systematic collection of recently-produced maps and other cartographic items, map analysts, map curators, librarians and archivists are becoming concerned enough that in some countries a concerted effort is being made to acquire and preserve cartographic items of the recent past. Excellent work is being done in Britain by the Copyright libraries through specialized Map Rooms. The British Library (formerly British Museum) Map Room, London; the Bodleian Library Map Room, Oxford; the University of Cambridge Library, Cambridge and the National Library of Scotland Map Room, Edinburgh, all have splendid collections and highly trained map library staff. Contemporary material is chiefly deposited under copyright, but even these impressive collecting programmes do not ensure preservation of the ephemeral material arising in the recent past. Both the artefacts and documentation necessary to explain production would not likely come into their care.

Having decided to preserve the cartographic products of the recent past, the archivist or map curator must select which maps are to be retained permanently. Selection criteria might differ from those used in acquiring maps for their informational content. Should one preserve only the final printed map produced by every map-making process used in this century? It might be more appropriate to retain, in addition, selected proof copies which demonstrate a state in each of the technical processes of map production. The annotations made by editors relating to colour, composition and detail are important to an understanding of the technical problems associated with a map production process. One can appreciate a parallel value in proof copies of artists' works. Consideration should be given to retaining trial samples, even unsuccessful ones, some of which may have failed only because technology was not yet advanced enough to satisfy the conceptual requirements. For example, fluorescent maps were attempted in the 1930s but, due to printing limitations, were unsuccessful and were abandoned until World War II.[3]

A good understanding of map production of the recent past will require study of those agencies and organizations where maps originated. It will necessitate the collection of records of these agencies to document their mandate or area of activity, their policies, their production programmes, and their methods of operation. Far too little is known about the map-makers of this century. What kinds of maps they made, the design theories to which they adhered, why they produced maps and for whom the maps were created are merely a few of the questions for which answers must be sought if our knowledge of map production is to be enhanced.

The difficulties in tracing the history of governmental map producers have been aptly demonstrated by Gerald McGrath, who studied the establishment of the

3 C.J. Crandall, "Fluorescent Map and Chart Development," *The Cartographic Journal*, Vol. 10 (December 1973): 95-98.

Directorate of Overseas Surveys, a British Government organization devoted to surveying and mapping in some areas overseas for which Britain had responsibility. He states "The institutions of Government appear to take root quickly. . . . They grow, sometimes into branching forms of great complexity. But often the nature of the seed, and the identities of the sowers, are readily forgotten. To some they have never been known."[4]

The history of non-governmental map producers is even more poorly understood. In Edinburgh, for example, are many once-famous cartographic houses whose history, if known at all, is recorded incompletely. Some names which come to mind are W. & A.K. Johnston (subsequently Johnston and Bacon), Thomas Nelson & Son and Gall & Inglis. All have made significant contributions to cartography, most notably Keith Johnston whose early work is known world-wide. One company which has produced a history is John Bartholomew & Son Ltd.[5] This publication follows the growth of the company since its inception and it enhanced by good illustrations in monochrome and colour, but it is lacking in technical details. This is an area of research which cartographic historians and archivists must become more familiar with if they are to preserve cartography and cartographic information of this century. Having established the structure within which maps were and are produced, the archivist or curator can begin preserving the records and artifacts of cartographic technology.

It is in the area of map-making technology where archivists face the greatest challenge, for this is an approach not generally taken by members of their profession. In order to document well the technology of map-making, the archivist and map curator must be ambitious. The aim should be to have available to researchers the maps themselves, the tools which were employed in making them, and the manuals and specifications which guided the practitioners and provide evidence of the technology employed. Too often the available information about map production is lacking in precise technical details. Ravenhill commented on this omission when he noted that "many publications confine themselves to. . . descriptions of maps and to bibliographical, chronological and biographical date. . . we would much rather have more precise information on the topographical instruments. . . or graphic techniques. . . ."[6]

Our recent map-making past has been characterized by speed and productivity such as have never before been witnessed in this field. Demand for maps has increased at an unprecedented rate throughout the world, and technology has been harnessed to provide new ways of making maps to meet the demand. In the recent past we have witnessed the decline almost to extinction of copper plate engraving—the craft on which cartography was based for so long—and the introduction of electronic data-handling and automated drafting systems such as were undreamed of at the beginning of the century. Technology has given map-makers the means of producing more maps faster and with greater accuracy. At the same time new technological developments have presented new challenges to map-

4 G. McGrath, "From Hills to Hotine," *The Cartographic Journal*, Vol. 13 (June 1976): 7-21.
5 L. Gardiner, *Bartholomew 150 Years* (Edinburgh 1976).
6 W. Ravenhill, "The Mapping of Great Haseley and Latchford," *The Cartographic Journal*, Vol. 10 (December 1973): 105-111.

makers, who have sometimes had to make accommodation for the limits of this technology.

Hill shading is a case in point. Hill shading, also referred to as relief shading, is the graphic technique of creating an illusion of three dimensions to give an impression of hills, valleys and plains by drawing in the shadows and highlights as if on a model of the ground. The effect produced is comparable to a relief model, though the paper surface is, of course, flat. As a result hills look as if they were raised up while valleys appear as hollows. At one time hill shading was drawn directly onto the grain of the lithographic stone and printing was carried out directly. As the printing process changed, new techniques for producing the effect of shading had to be devised. Photolithographic metal plates required screens to produce the shading effect, which remained a convention of cartographic design. Today the challenge for practitioners is to produce this effect from automated drafting systems and computer-aided graphics.[7]

An effort should be made to preserve the apparatus of cartography: the tools and the machinery. The whole range of engraving (copper and steel engraving) tools and presses is in need of preservation. Good collections of these do exist, at the Victoria and Albert Museum in London, for example, but isolated examples only serve to show the need for more general collecting. Equally the entire process of lithographic stone preparation and printing requires attention. To give a concise example of the importance of copper engraving techniques is not easy. In many copper engraved maps a small open circle was used to indicate towns or cities. This symbol was easily impressed into the copper plate surface by a hand tool having a hollow tubular "point". Subsequently, when making maps by pen-and-ink drafting, such small circles were not so easy to make even with special compasses, stencils and other aids. Today symbols for those town rings, or as they are still often termed, "town stamps" (on account of having originally been stamped or pressed into the copper), can be made by various means such as photosetting, and applied to artwork. The point is that the symbol has been retained even after copper engraving is no longer used.

Our predecessors have been no more conscious of their recent past than have we been of ours. It is only as a result of spectacular research and detective work that historians have pieced together parts of the past that were common knowledge to the practitioners of those times. David Woodward's work in the preparation of *Five Centuries of Map Printing*,[8] for example, necessitated painstaking research. Similarly Cornelis Koeman's patient work in re-creating aspects of the working methods of Blaeu permits scholars a greater understanding of this cartographer's craft and appreciation of his accomplishments.[9]

But what of those aspects of map production that we have not yet been able to reconstruct? Much skill has been required to produce the cartographic forms of the past, but a great deal of this knowledge has been lost. A colourful example comes to

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7 P. Yoeli, "The Mechanisation of Analytical Hill Shading," *The Cartographic Journal*, Vol. 4 No. 2 (December 1964): 82-88.

8 David Woodward, *Five Centuries of Map Printing* (Chicago 1975).

9 C. Koeman, *Joan Blaeu and His Grand Atlas* (London 1970).

mind. At the Empire Exhibition in Glasgow in 1938, two large terrestrial globes were on display, where they were seen by thousands of people each day. Many remember them as massive, one measuring fifteen feet (4.57 metres) in diameter, mounted on an inclined axis on top of a small building and revolving in the centre of a public exhibition hall. The globes were constructed in Scotland between 1936 and 1938, and yet today very little is known about either globe. A representative of the company for whom one of the globes was manufactured commented that "we have no written evidence of the existence or composition of the globe." This individual recalls the "rumbling noise" of the rotating globe, noting "I have the impression that the globe was exhibition property . . . and that the intention was to give the globe to some museum or gallery after the Exhibition finished – but this is not confirmed."[10] The internal construction of the globe is well-documented in a 1938 issue of *The Engineer.*[11] However, the construction method used for the surface of both globes is a mystery. It is not even certain what happened to these globes when the Exhibition closed. The buildings in which they were housed were demolished, and perhaps the globes were destroyed at the same time. How easily even spectacular pieces of cartography fall into oblivion.

We have the potential to rebuild, from pieces gathered from different sources, the technical expertise of the recent past. By using the technical manuals which have been preserved, we should be capable of re-creating the work of yesterday's practitioners. Draftsmen's guidance manuals indicating line widths, type sizes, screen percentages and other standards contain the information which researchers of the future will require. Production manuals and specifications may be difficult to find, since many circulate internally within organizations without the status of publication. However, the benefits of collecting and preserving them are great. Walter Ristow, in his description of the Anastatic Process of map printing, refers to the very practical nature of the description of this process in the *Art-Union* issue of February 1845.[12] A pamphlet entitled "Map Reproduction" (Chapter X of the Handbook of Topography prepared by G.A. Gordon in 1911) re-issued in 1919 by the Survey of India[13] gives such detailed information about the Vandyke Process as to virtually enable any reader to carry it out. Other similar manuals and specifications must be located and preserved.

The inter-disciplinary approach to collecting and preserving information about the recent past may necessitate initiatives not now commonplace among map curators and archivists. The skill of the practitioner might best be captured, for example, through interviews with those individuals who made maps, who witnessed changing needs and implemented technological development to keep pace with those needs. Hence an oral history programme might add an important body of information to our knowledge of the cartography of the recent past. The

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10 Personal correspondence between the author and a retired representative of the manufacturing company, who prefers to remain anonymous.

11 "Empire Exhibition, Glasgow Pt 1, Exhibits at Bellahouston Park, The Revolving Globe," *The Engineer* Vol. CLXV (May 6, 1938): 497-501.

12 W.W. Ristow, "The Anastatic Process of Map Reproduction," *The Cartographic Journal,* Vol. 9 No. 1 (June 1972): 37-42.

13 Survey of India, *Map Reproduction* (Calcutta 1919).

collection of artifacts relating to map production may not conform to the acquisiton mandate of institutions which now preserve maps and other cartographic forms. Such an undertaking would require difficult decisions relating to policy. Careful consideration of our map-making past and our responsibility to preserve what is significant from the past is essential. Dialogue among map-makers, curators and members of the academic community must be nurtured, so that map custodianship might embrace a wide range of experiences relating to cartography.

Résumé

L'auteur démontre que nous ne pouvons comprendre l'histoire de la cartographie que si nous avons des connaissances dans la technologie da la cartographie. Il plaide surtout pour la conservation des documents, outils, histoires orales des cartographes récents en plus des cartes qu'ils ont faites.