Cybercartography in the 21st Century

Fraser Taylor
in conversation with Alexander Wolodtschenko and Florian Hruby

Volume 4 of *meta-carto-semiotics* continues the section "interviews" with Fraser Taylor. Prof. D.R. Fraser Taylor is a very well-known cartographer and geographer from Carleton University, Ottawa, Canada. He introduced the concept of cybercartography in 1997.

About the interview

This interview was conducted via email during October and November 2011. The final version was authorized in November 2011.

About Fraser Taylor

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Professor Taylor (born 1937) is a very well-known cartographer and geographer. He was elected a Fellow of the Royal Society of Canada in 2008. Some selected positions he held:

- President of the International Cartographic Association (ICA) from 1987-1995, Vice-President 1983-1987. ICA Honorary Fellowship (1999)
- President of the International Union for Surveys and Mapping from 1989 to 1993
- President of the Canadian Cartographic Association in 1978 and 1979
- Chair of the International Steering Committee for Global Mapping (since 2002)
- Chair of the International Advisory Group to the Arctic Spatial Data Infrastructure (2010)
- Director of the Geomatics and Cartographic Research Centre (since 1995)
- Author of 20 books and edited books, 50 book chapters, 101 peer adjudicated journal articles, 110 presentations to major international conferences and over 50 other publications
- Extensive coverage of his work on TV, radio and in newspapers and magazines both in Canada and overseas

1. You were President of the International Cartographic Association (ICA) for two terms from 1987-1995. What characterized the ICA and what characterized cartography in these eight years?

I took over as President of ICA after a very extended period of leadership by Professor Ormelling (sr). If there was one theme which persisted over that period it was initiating and adapting to the exciting changes taking place in cartography as a result of very rapid technological and societal changes which of course are still ongoing. It was also a time to regularise procedures in ICA and to make ICA procedures transparent and available in documentary form. It was also important to increase the visibility of cartography and to make involvement in ICA and it's work as inclusive as possible.

Some steps which were taken included excellent work by the Secretary General Jean Phillipe Grelot to publish in both French and English all of ICA's rules regulations and procedures which had never been done before; the establishment of new Commissions and Working Groups such as that on Women in Cartography and a special emphasis on involvement of cartographers from developing nations in all ICA Commissions and Working Groups; Achieving ICA associate membership of the International Council for Science (ICSU) which I consider a major step in indicating the scientific importance of cartography as a discipline not just a technology; The establishment of Commissions on Visualisation and Internet Cartography to ensure that ICA was part of the response to rapidly changing technologies and a variety of other steps.

Such changes were not easy to make and not all ICA Executive Members were in favour of them. My emphasis on the importance of giving women a larger role was a case in point. I was delighted that Barbara Petchenik was elected as the first woman Vice President of ICA and saddened by her premature death. This did give me the opportunity to establish the Barbara Petchenik Chidren's Map Competition which has given me great satisfaction as it has grown over the years. Several members of the ICA Executive of the time were concerned that it was not a practical thing to do.

2. During the last years, the ICA celebrated several anniversaries, e.g.: the 50th anniversary of the first ICA General Assembly. In your opinion, does the ICA need a structural reform half a century after its debut?

I do not think that ICA is particularly in need of structural reform but it needs to be as agile as possible to respond to rapidly changing circumstances and opportunities. If there are procedures which limit rapid response to change then these need to be revisited. Four years between General Assemblies is a life time in terms of the current very pace of change.

3. In the late 1990s, you proposed the new term "cybercartography" or "Cybernetic Cartography" for a multi-dimensional 21st century cartography. An interesting example of cybercartography was the Canadian Geographic Explorer. However, it seems that the international cartographic community did not adopt this proposal - at least when we take the frequency of the term's usage as an indicator of a paradigm's success. On taking stock: Did the concept serve the intended purposes?

Although the term cybercartography was not widely used after it's introduction in 1997 many of the ideas and approaches it suggested have been implemented and built on so I think it served it's purpose as did some of the earlier ideas I introduced on the need for cartography to respond to changes in innovative ways. Several of my suggestions on the need for change such as the presentation I made at the Bournemouth meeting were reported in several languages including Hindi, Mandarin, Dutch, German, Spanish, Catalan,and Portuguese.

4. Your last answer raises a question on the recent history of cartographic science: You mentioned regarding cybercartography, that "many of the ideas and approaches it suggested have been implemented and built on". For younger researchers and from today's perspective, this may sound like a self-fulfilling prophecy. Did 1990's cartography discuss alternatives for its future development? Or did cartography just evolve in a predictable way?

During the 1990's there was serious debate about the directions for cartography and alternatives for it's future development. This took place at every ICA conference during the period as well as in many Commission and Working group meetings. One of the roles of an ICA president is to give intellectual leadership in this respect. I give as an example my Presidential Address in 1991 entitled "A Conceptual Basis for Cartography; New Directions for the Information Era". This was widely published by different nations in their own journals and was widely debated. In the address you will find references to many of the trends which later characterized cartographic development during that, and subsequent decades.

Cartography did not simply evolve in a predictable way as your question suggests. There was a conscious decision making process going on. The directions I was suggesting were not universally accepted at the time and their were many disagreements. It will not surprise you to know that in developing cybercartography I followed my own advice given in 1991! These were not self fulfilling prophesies. I should add that I was, of course, not the only person suggesting new directions for cartography in 1991.There were many others.

5. Generalizing question 3: Is there one worldwide homogeneous view of cartography in terms of a general accepted cartographic paradigm?

There is no universally accepted paradigm of cartography other than an acceptance of the centrality and importance of maps and mapping although both the process of mapping and the form and content of maps continues to change.

6. Is the absence of such a general paradigm a weak point (causing e.g. that cartography is not always perceived as an independent scientific discipline) or rather an advantage (that allows e.g. to position cartographic matters more easily in a multidisciplinary context)?

I think that the answer is that this is both a weak point and at the same time an advantage. Cartographers are always worrying about their identity. Our identity will to a large extent be best illustrated by what we do, not by theoretical arguments. The fact that we happily exist in a multidisciplinary context is an advantage. Cartography can draw disciplines together in new ways. In producing cybercartographic atlases for example we often call on contributions from as many as ten different disciplines as diverse as Music, Art, English Language and Literature, Computer Science and Psychology. Each discipline contributes to a product which is centered on the map and which is holistic in nature.

7. The concept of cybercartography is based on e_maps and e_mapping is one of the concepts of technological cartography. Later, you proposed another definition for cybercartography as a new theoretical construct. Which role can or should cybercartography play in the 21st century?

Cybercartography continues to change and evolve in both theoretical and practical terms. There is a very close relationship between theory and practice. I was fortunate to receive a major grant from the Social Sciences and Humanities Research Council of Canada in 2004 to develop and implement the concept. This resulted in the production of two cybercartographic atlases and a book entitled "Cybercartography – Theory and Practice" published in December 2005. This was followed by a special issue of Cartographica on cybercartography published in June 2006. My more recent thinking is published in the Journal of Digital Earth in 2010 which specifically looks at the history and development of the concept. Interested readers are referred to these for a fuller description.

There have been substantive changes in both theory and practice and change is ongoing. Some recent observations in this respect:

Location is now central to all aspects of society and we are moving from managing spatial information to managing all information spatially. The map, especially in cybercartographic form is of central and growing importance.

We are moving to a situation where people are becoming map creators and cybercartography is responding to this. We have developed a new framework which allows people with limited knowledge of cartography to enter their own information and have developed a new iPad-application to facilitate this. Cybercartography allows people to tell their own stories in their own ways and to take ownership of their own cybercartographic atlases as several communities in Canada's north are currently doing.

Tim Berners Lee has identified two major challenges for the future of the web. The first is linking data sets. The second is innovative ways to display information which people can understand. Cybercartography does both and is very much a Web 2.0 and 3.0 concept.

There are many aspects of cybercartography which are being pursued under a variety of names but I think that the holistic approach we use is what characterizes our work.

8. Recently, "meta-cartosemiotics" has been proposed as a new theoretical conception of cartography (Wolodtschenko 2009, 2011[1]). This new conception competes with the cybercartography concept. How would you evaluate this „competition"?

I do not see meta-cartosemiotics as a competitor to cybercartography but as an approach which considers some, but not all, of the approaches we use. Cybercartography includes a number of administrative and management issues as well as technology and cartographic theory.

9. What role will play e_atlases on small screen devices (e.g.: smart-phones) in 21st century cybercartography?

The new mobile devices are becoming smarter all of the time. These are multi-media devices so cybercartography will be an important way of ensuring that maps are an important part of the available content. This is of course already happening with Google maps etc. which are ubiquitous but these are mainly used for location only by most users. I think there is great potential for thematic mapping on a wide variety of topics but this will require innovative design and the inclusion of sound to overcome the limitations of small screen size. The new president of ICA is leading a group doing exciting research in this field. Tourist mapping is an obvious opportunity and considerable work has already been done in this area. The devices can also be used to input data and will support the rapid growth of Volunteered Geographical Information to new forms of cybercartographic products. Consumers will want instant maps on demand and locationally referenced material on a wide variety of topics.

Cybercartography, as I envisage it, will be an important way of responding to this growing demand in the field of social networking. Location is key to the future and mobile devices will carry increasing information of all types including real time sensing. Cartography should position itself as central to this emerging Web 3.0 era but to do so will require imagination on the part of cartographers to use the emerging new technologies. Maps and mapping are excellent ways of communicating complex information in forms that people can understand.

Selected Writings

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