Cartography and Geoinformation in the 20th and 21st Centuries

Ferjan Ormeling
in conversation with Alexander Wolodtschenko and Florian Hruby

Volume 4 of *meta-carto-semiotics* opens the section "interviews" with Ferjan Ormeling, well-known cartographer from Utrecht University, in the Netherlands. His talent as organizer and lecturer was reflected in diverse institutional and non-institutional organisations and forums.

About the interview

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

About Ferjan Ormeling

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Ferjan Ormeling (born 1942) is a well-known scientist and educator in the domain of cartography and geosciences. Some selected positions he held:

- Secretary-General and Treasurer of the ICA from 1999-2007; chair and co-chair of the ICA Standing Commission on Education and Training (CET) from 1987-1999. Co- and organizer of diverse seminars in developing countries. He has participated in ICA work since 1967. Was awarded the ICA Carl Mannerfelt gold medal in 2009.
- Member of the Netherlands Cartographic Society (NVK) since 1961, member of the NVK board from 1974-1997, vice-president since 1983 and president from 1995-1997.
- Convenor of the United Nations Group of Experts on Geographical Names (UNGEGN) working group on toponymy courses, and vice-chair of UNGEGN 2007-2012.
- Author of more than 15 monographic works und ca.400 other publications for atlas cartography, toponymy, cartographic education, cartographic visualisation, history of cartography etc.

1. Will the subdivision or antithesis between technological and theoretical cartography continue in the 21st century?

Technological cartography has left theoretical cartography too far behind: Technically we can combine any number of spatial data sets digitally, but conceptually, GIS has not moved beyond McHarg's overlays or Maull's Grenzgurtelmethode. Different weights of factors can hardly be attributed within a GIS, nor is it possible at present to forecast the data quality of data combinations within GIS. That means that the technical possibilities of combining spatial data and processing them in a GIS have much further advanced than the theoretical ones. Also, despite all advances in digital generalisation, no overall generalisation theory has been worked out, nor are there convincing solutions for digital generalisation of all relationships between cartographic objects.

These increasing imbalances have to be adressed in a field where there seems to be a continuously decreasing place for cartographic theory. There seems to be a real danger that unless we are able to turn the tide, only technological cartography will be left. At the same time we need theoretical cartography more than ever. So, if you ask whether the antithesis between theoretical and technological cartography will persist this century, my answer is that I hope it will, as they need each other: without technological cartography we seem unable to produce maps, and without theoretical cartography we seem unable to produce maps that correctly model reality.

2. Is there one worldwide homogeneous view of cartography or are there many different views?

This is difficult to answer, because the theoretical debate has been obscured by the present emphasis on technological issues. We used to have a strong international debate on theoretical issues before the advent of digital cartography. Practical and technical cartography reached great heights in German-speaking countries in the second half of the 20th century, but from a theoretical point of view it was a backwater. The reason was partly linguistic (those in charge in Academia, with the exception of Imhof, Freitag and Breu had insufficient knowledge of foreign languages) and partly conceit-driven (they thought, that cartography was best in their own area, and did not have to learn much from outside, which was of course true). I consider the theoretical contributions of Arnberger, Witt, c.s. as purely descriptive. They did not pick up the contributions by Bertin (and left it to 'youngsters' like Scharfe and Spiess to deal with his work), and neither did they engage in the debate (partly within ICA) between (American) communication cartographers and (Soviet) cognitive cartographers. So, indeed, from a practical point of view you were superbly trained in cartography in Vienna but, in my opinion, theoretical aspects had become a bit outdated there. But that is normal in science, that in some area 'progress' starts earlier than in other areas, and, again, in my opinion that was caused in this case by the non-participation of leading german-language cartographic theoreticians in the work of ICA.

German-speaking cartographers were also late in embracing digital techniques (at first because the high level of analogue cartographic production could not be approximated by digital means) but right now they have surpassed other countries again in the application of digital techniques to our profession. But, also in German-speaking areas, this has been detrimental to theoretical studies.

Because of Alexander's specialization on semiotical issues, possibly the more general theoretical debate within cartography, that should have taken place in his commission, perhaps has suffered a bit.

To answer the question: even if there are still different theoretical views of cartography, regionally, these are presently overshadowed by the emphasis on GIS techniques.

3. Is there no unified self-conception of cartography?

As the theoretical views of cartography are overshadowed by the emphasis on technological aspects (just as nationalism was made invisible during communism) this as well is difficult to answer. My guess is that, should the technological emphasis become less overbearing, the different theoretical views would emerge again.

4. Who is the founder of German-speaking cartography?

For me, Eckert is too descriptive in his work to be nominated founder of a cartographic science. He describes which kinds of symbol can be used when mapping specific themes, without any reference to perception psychology, tests or research in general. He provides no all-encompassing research structure for our field. He does mention Peucker and research in rendering the 3rd dimension on maps, but not the major aspects of cartographic cognition. Even, when compared to Ritter or Zondervan, Eckert's work is a decline. Imhof at least tries to construct a theory of cartographic representation based on the relations between mapped objects, so for me he is the founder of German-speaking cartography. Even so, Eckert was beneficial to our discipline as he was the first to be nominated Professor, which meant academic recognition of cartography as an academic subject.

5. Are there any concrete examples of how Kolačny's model of cartographic communication changed the design of cartographic products?

There are hardly any, at least not directly. As you know Kolačny was prohibited to publish shortly after the Prague Spring. Just before that, early 1969, he circulated to the members of his ICA working group on cartographic information a report called *Utilitarian cartography, the road towards the optimal effect of cartographic information*, and in that report he for instance incorporated studies about the optimal dimensions of symbols for school wall charts, and about the optimal contents of school atlases, based on a study of the geographical names used in the news media. The report contained an important scheme about map design: this process should start with an analysis of the needs, interests and aims of the map user, as well as his dispositions, before setting up the map parameters, checking on the map symbols, making preparations for representation of the map, checking of the experimental map and edition of the map. And this process should be terminated with research on the work with the map, from which conclusions should be derived, to be used for future editions of the map. But even if his work in the Research institute for geodesy and cartography was not continued, Kolačny's cartographic communication model opened up our field worldwide for testing (of the amount of overlap between the sent and the received or even mastered information), and thus ultimately, through these tests cartographic design was improved.

6. What can we expect in the next decades of the 21st century regarding scientific publishing culture in cartography?

Increasingly we will find the important new contributions from ICA commissions published on the commission websites, without any copyright restrictions. 3 years after ICA conferences all papers are already downloadable at the ICA website. So access to cartographic literature has improved enormously. Apart from that, more formal publications such as manuals and handbooks will continue to play a role, but because of the competition from the web they will be less expensive. With the new publisher Springer and its *lecture notes in geoinformation and cartography* we will already succeed in reaching a larger audience at lesser costs, and new models have been introduced of making accessible print-out of e-books for students at competitive prices. We still have problems in getting practical cartographers the information they need, and the commission on map production still has a task there.

7. Which trend will be dominant in cartographic education of the 21st century?

My prediction is that cartographic education will become more human-centered instead of data-centered. As long as we have to look at maps in order to gather spatial information, cartographic education will be crucial in order to correctly visualise spatial data. The current trend of geoinformatics education is very much engineer-driven and does not take account of the fact that the information has to be adapted to the message and to the audience before it can be passed on. So, as far as I am concerned, I will put my money on the ICA Commission for map and spatial data use, and on usability studies, and I trust that these subjects will become more prominent in 21st century cartographic education.

The current technology has enormously impoverished cartographic education in most geographic faculties, as it has reduced cartographic education to ArcGis training: a package with which half the current map types cannot be constructed. We clearly need programmes to visualise statistical and other spatial data with more degrees of freedom than are available from ESRI and related firms.

The smaller interest in mapping amongst geographers is offset by an increasing interest in mapping in the environmental sciences and the liberal arts, where, through the spatial turn, more interest emerges in visualising spatial aspects.

8. In your opinion, does ICA need a structural reform?

ICA is only accessible to individual cartographers if a cartographical society exist in one's country, and that leaves out many countries in the world. ICA is less accessible if some official institution, like the country's topographic survey, is represented in ICA – then it depends on this institution whether all cartographers from that country have access to ICA. We tried to work at individual membership, but that seems to be just too big an administrative effort to realise. But for cartographers from countries where cartographic societies (or at least national bodies that are represented in ICA) exist, there is a good chance, if these cartographers are good and willing to participate in the work, to join ICA commissions. There seldom is a prohibitive registration fee for commission meetings, and in these commission meetings it is where the real work in ICA is done. We are very special in the sense that we are a bottom-up association, and that lowers the thresholds to participate in ICA work. In this sense, I do not think ICA needs a structural reform.

9. Where will the new 'digital' generations take cartography?

The digital generations have brought us ubiquitous cartography, that is spatial data that can be accessed anywhere, anytime. These generations will realise before long, that in order to be able to read and process and understand that spatial information, people want it to be designed in a form they can cope with. And they also will understand in time that people at large will need some coaching in map use, in order to understand what they see on their screens. So these 2 challenges, designing cartographic products for new platforms and explaining new user groups how the cartographic constructs work, will be the major issues for the next 20 years. I do not mind whether these new generations will name their occupation cartography or something different, although it will be easier for them if they stick to the name cartography (even if that has the connotation of the use of drawing pens and India ink) as that will enable them to retrieve relevant literature about all aspects of spatial visualisation, that were studied in the past, quicker. In many GIS journals people are inventing the wheel again as they are trying to find out aspects of colouring or generalisation that were described and solved decades ago for analogue cartography!