William Cartwright · Georg Gartner · Antje Lehn (Eds.)

Cartography and Art

Springer
Preface

This book is the fruition of work from contributors to the *Art and Cartography: Cartography and Art* symposium held in Vienna in February 2008. This meeting brought together cartographers who were interested in the design and aesthetics elements of cartography and artists who use maps as the basis for their art or who incorporate place and space in their expressions.

The outcome of bringing together these like minds culminated in a wonderful event, spanning three evenings and two days in the Austrian capital. Papers, exhibitions and installations provided a forum for appreciating the endeavors of artists and cartographers and their representations of geography.

As well as indulging in an expansive and expressive occasion attendees were able to reflect on their own work and discuss similar elements in each other’s work. It also allowed cartographers and artists to discuss the potential for collaboration in future research and development.

To recognise the significance of this event, paper authors were invited to further develop their work and contribute chapters to this book. We believe that this book marks both a significant occasion in Vienna and a starting point for future collaborative efforts between artists and cartographers.

The editors would like to acknowledge the work of Manuela Schmidt and Felix Ortag, who undertook the task of the design and layout of the chapters.

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1 Maps and Mapping in the Eyes of Artists and Cartographers – Experiences from the International Symposium on Cartography and Art

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1.1 Introduction

Contemporary methods for depicting the earth and its cultural and natural attributes use graphic and non-graphic formats, maps and map-related artefacts, for visualising geography and for building virtual landscapes and environments. The discipline area of cartography, traditionally, has applied art (design), science and technology to map-making to design and realise these products. Prior to the mid 1950s cartographic artefacts were built under the theoretical and practical ‘umbrella’ of this partnership of art, science and technology. However, since then it is argued, the theory and methodology associated with visualising geography has focused on science and technology, and away from art. This ‘move’ away from art was accelerated by: 1. Computing, computers and complete automated systems; and 2. A ‘quest’ to gain ‘scientific legitimacy’ by using scientific visualization as a lodestone for gauging the ‘quality’ of theories and applications (Cartwright 2008, Gartner 2008). In order to bridge the gap between science and art in cartography initiatives have been taken which led into the organisation of an International Symposium on “Cartography and Art” in Vienna 2008.

1.2 Establishing an Exchange Forum for Cartographers and Artists

The International Symposium “Cartography and Art – Art and Cartography” took place from January 31 to February 2, 2008 in Vienna, Austria. It was backed by
the International Cartographic Association (ICA) and organised by the Institute of Geoinformation and Cartography of the Vienna University of Technology, the Institute for Art and Architecture, Academy of Fine Arts Vienna and the School of Mathematical and Geospatial Sciences, RMIT University.

Ideas behind establishing such an event were developed and derived from various discussions of cartographers to topics like ‘aesthetics’, ‘artistic aspects in cartographic communication’ or ‘cartographic heritage’, which finally led into the foundation of a new Working Group of the International Cartographic Association called “Art and Cartography”. The objectives of this working group are primarily to stimulate and establish co-operations and links between cartographers and artists. With this it might be possible, to bring the artistic aspects of maps again as a main focus. The symposium in Vienna was the result of the initiative of William Cartwright (President of the International Cartographic Association, then Chair of the ICA Art and Cartography Working Group, RMIT University Melbourne), Antje Lehn (Academy of Fine Arts Vienna) and Georg Gartner (Vice-President of the International Cartographic Association, Vienna University of Technology) and was meant as a first attempt to establish an exchange forum for cartographers, artists and architects to enable discussions and to encourage interdisciplinary cross-fertilisation of ideas and concepts.

1.3 The Symposium on “Cartography and Art”

Interested participants were invited to present their work on topics related to the artistic aspects of cartography. There were no specifications that limited contributions to look at maps of historic periods only, but a general call was made for contributions that addressed contemporary aspects of cartography and art. Furthermore, interested scientists and artists who attempt to communicate space and place by means of modern media or experimental artefacts and establish alternative options to the use of maps as the main mean of spatial communication were invited to participate. The only limitation was that they needed to keep to the ‘spatial context’.

The call for papers aimed at attracting contributions as scientific papers, posters, installations, videos, web applications and experimental media. It was answered by many contributions from more then 20 countries and various disciplines. A wide spectrum of the submitted contributions was the result. The selection of the contributions was undertaken by William Cartwright, Antje Lehn and Georg Gartner. This was done with respect to criteria of scientific and artistic originality and quality. Finally more then 60 contributions, representing authors of 15 different countries, were selected.
Fig. 1.1. Extract of the work by Ruth Watson – The Reformed World (for Johannes Stabius) Photograph: James Geurts
Due to the heterogenous nature of contributions three different event locations were used to present papers, artefacts and installations in an appropriate way. Venues for the symposium were the main hall of Academy of Fine Arts Vienna (artefacts, paintings, installations, videos), the Kunsthalle Wien project space (Contemporary Art Gallery used for short presentations by artists, works from in the fields of architecture, conceptual art and digital media) and Vienna University of Technology (scientific contributions presented as lectures and posters).

The event began with a vernissage of the exhibition ‘zoomandscale’ at the Academy of Fine Arts Vienna. Here, works were presented related to the context ‘Cartography and Art’ from the perspective of artists. These works drew a thematic bow from maps to artistic descriptions of specific places as a starting point for orientation strategies, and maps as metaphors. The exhibition was curated and organised by a group of artists ‘collabor.at’ together with Antje Lehn. It encouraged visitors to participate in the event through the use of reduced instruments for measuring and surveying like ladders and field glasses, which contained associations to the process of mapping. Large paper banners structured the space and created a backdrop to the artwork. Artists included Wolfgang Fiel, Gabu Heindl, Nicole Six & Paul Petritsch, Christian Mayer (all from Austria), Peter Dykhuis (Canada), Manuela Mourao (USA), Proboscis (UK), Ludo Slagmolen (The Netherlands), Laurene Vaughan (Australia) and Ruth Watson (New Zealand).

The scientific lecture program held at the Vienna University of Technology was organised in themes. Philippe Rekacewicz, cartographer and journalist of the French monthly newspaper ‘Le Monde diplomatique’ was invited as a keynote speaker. In his lecture he drew a picture of the joint aspects of artistic map production to mapping art. His main argument consisted of the idea that artistic elements in maps have a high significance for the efficiency of the cartographic communication processes. Following this keynote, the opening session, ‘Theory’ consisted of presentations by William Cartwright (Australia), David Fairbairn (England), Felicitas Thun-Hohenstein (Austria) and Markus Jobst (Austria). As result of this introductory session the theoretical basis of the importance of re-addressing the relationship between art and cartography was established. From the presentations it became clear that it is very useful to compare the various terms, concepts and theories of the diverse disciplines represented at the event. Finally, all presenters accentuated the importance of cooperation between the various disciplines, which provides the ability for increasing the efficiency of the cartographic communication processes by enhancing mapping processes with art elements.

In the following session ‘Cartographic Design’ detailed suggestions were given to provide support, through examples, the topics previously mentioned. Bob Lilley (England) analysed the artistic aspects in historical and contemporary maps at the United Kingdom’s Ordnance Survey, David Forrest (Scotland) featured the aspect of ‘composition’ as the central element of map design, Jari Korpi (Finland)
discussed the design of associative symbols and their application to crisis management applications and Jeroen van den Worm (The Netherlands) presented a general methodology for the standardisation of cartographic symbols.

The first day of the symposium was completed with two sessions entitled ‘Integrated Media’ and ‘Non Graphics’. In the first session Sebastien Caquard (Canada) and Teresa Castro (France) drew parallels between the composition and elements of cinema and cartography. Anna-Lena Kornfeld (Germany) demonstrated with ‘Soundslike’ the potential of the acoustic channel for the communication of spatial information, while Robert Edsall (USA) addressed the similarities in composition and design aspects analysed between music and cartography. In the first presentation of the session ‘Non Graphics’ André Skupin (USA) analysed the role of written text in cartography and art, followed by presentations to the context of literature and cartography by Armin von Ungern-Sternberg (Germany), Nils Plath (Germany) and Harriet Edquist (Australia).

For those participants who were still ‘hungry’ for more the second part of the exhibit ‘zoomandscale’ was offered. In the nearby project space of the ‘Kunsthalle Wien’ various multimedia presentations of conceptual works related to the context of cartography and art were given. The evening session included presentations by Wolfgang Fiel, Sabine Müller-Funk, Waltraud Palme, Christian Spanring, Titusz Tarnai and Evamaria Trischak (all from Austria). The exhibition also contained performance site models and animations by architecture students of the Academy of Fine Arts, an interactive map of Europe, a mapping project describing the city of Vienna by the intersection of the minute points and other multimedia installations focussing on spatial and architectural themes.

The second day of the scientific program at TU Vienna started with poster presentations. Manfred Buchroithner (Germany) analysed 3D-relief representations in the context of aesthetic aspects, Zsolt Török (Hungary) discussed the context of modern technologies and map production, Alexander Wolodtschenko (Germany) presented prehistoric maps as an example of cartosemiotics, Jan Blaha (Czech Republic) analysed aspects of creativity in cartography and Jesus Reyes (Hungary) presented maps of children. Finally, a display of paintings by various artists who had developed their representations of one particular place was presented by Vanessa Parravicini and Klaus Kramer (Austria).

The presentation program began with a session on ‘Aesthetics’. The presenters, Ján Feranec (Slovakia), Karel Kriz (Austria) and Alexander Kent (England) analysed the term ‘aesthetics’ from a holistic point of view and demonstrated, through historic and contemporary examples the aesthetic aspects of maps and cartographic processes. The following session on ‘Non-traditional mapping’ focused on the use of cartographic methods to represent ‘non traditional’ information. Stephanie Deitrick (USA) analysed the effective representation of ‘Uncertainty’, Barbara Piatti and Anne-Kathrin Reuschel (Switzerland) described through a brilliant
dialogue concepts of linking cartography and literature to produce an atlas of literature, Christina Ljungberg (Sweden) presented ‘Fluid Spaces’ and finally ‘Informal Geographies’ were presented by Michaela Kinberger and Verena Widorn (Austria), highlighting the sacred landscapes of Lahaul.

The final sessions focused on the term ‘design’. In the first session the perspective of designers, artists and architects was given and the second session was a forum for cartographers to give their perspective. The ‘artist oriented’ design session was opened by the internationally awarded designer Angie Rattay (Austria). She displayed her “Planet Earth – Directions for Use”, which has been featured in the mass media. Edward Kinman (USA) presented his work on representing places by ceramics, while in the presentations of Laurene Vaughan (Australia) and Peter Downton (Australia) presented conceptual works in the context of architectural artefacts and design principles.

The ‘cartography oriented design’ session was opened by Sidonie Christophe (France). She presented the outcomes of interesting experiments conducted IGN Paris, to incorporate colour palettes of famous painters into map legends for topographic mapping. A similar topic was presented by Lucie Friedmannova (Czech Republic). She analysed Claude Monet’s colour schemes and demonstrated a method to apply these to cartography. The final presentations by Alexandra Benova (Slovakia) and Mirjanka Lechthaler (Austria) dealt more generally with the definition of map styles and historical aspects of cartography and art.

1.4 Conclusions

Over a glass of prosecco the program was later analysed. Ideas for ongoing co-operations were discussed and established, for example the strengthened role of the ICA Working Group on Art and Cartography (http://artcarto.wordpress.com). Stimulated by the enormous response of the participants the organisers began this book as a formal outcome of the symposium.

References

2 Art and Cartographic Communication

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Abstract

Science and technology has been embraced by cartography as a means to ensure that what is presented is scientifically ‘correct’ – products are considered to ‘work’ if they are scientifically ‘elegant’, technologically ‘buildable’ and ‘deliverable’ using contemporary communications systems. But science or technology, need not always take on primary roles, and there now is a need to address the role that design needs to take to facilitate the further development of contemporary cartography, especially in the areas where new media has been applied to facilitate the building of geographical visualization tools.

This chapter addresses how, by incorporating ART elements into the design criteria of geographical visualization artefacts, ‘different’ visualization tools might be provided, by considering all three elements of cartography: art, science and technology.

2.1 Introduction

Understanding how technology works is important, but the partnership between art and science, and their contributions to the discipline, are as important. Art provides the ‘public face’ of cartography (and if we include the cartographer’s passion when designing particular products, perhaps the soul as well) and science complements this by ensuring that what is presented is scientifically correct, and what could be called ‘scientifically elegant’ as well. Science or technology, it is argued, needs not always to take on the primary roles in cartography. However, technology is needed to ensure that the designed product can be produced and delivered and science is necessary to ensure ‘correct’ and rigorous products. However, the resulting artefact, designed and produced by balancing the art, science and technology attributes, as a street artist juggler might balance a chainsaw, a watermelon and a table tennis ball,
has recently been biased towards science and technology, with art being relegated
to the position of ‘afterthought’ (thinking about the art elements after the prod-
uct’s specifications are ‘locked’ within a science foundation and technology-driven
production and delivery ‘envelope’. Cartography is different from other contempo-
rary disciplines insofar as it can design, develop and deliver products with an art or
a technology or a science ‘flavour’. But we need to address how to make art-biased
cartography as relevant as science or technology-biased cartography.

To illustrate this, take the simple process of recording spatial information by an
expert recorder using a pencil and a piece of paper. If a very hard pencil is used a
very precise product results. The definition between one feature and another must
be precisely determined and depicted and accuracy usually would reign over artistic
input. The resultant map, whilst showing precise positions and clearly demarked
divisions between different classes of information, cannot depict the vagaries and
overlaps that are characteristic of real-world geographical information. The depic-
tion can only show clearly defined edges of natural and cultural phenomena. The
map user can only interpret what is depicted by lines, points and polygons and
is unable to ‘read between the lines’ to comfortably interpret what may lie in the
zones between discrete classes of depicted data. If a very soft pencil were used,
a more flowing and interpretive map, or a more artistic approach to information
recording would result. The drawer of the map, not restrained by the imposed need
for accuracy and precision of a sharp, hard, thin pencil point, can render the paper
with a different type of portrayal of the real world. Areas of vagueness can be illus-
trated as such, interpretations can be made and impressionistic drawings produced
instead of planimetric map-type drawings produced using the soft pencil’s preci-
sion-demanding counterpart. A different portrayal of the same information would
result. Different users of these maps might prefer one information depiction device
to another, and some might prefer to use both maps, in different ways, to gain a
better understanding of the part of the real world being depicted.

An example of this is using a number of artefacts to gain visual information
about a city. It is argued; if different media are used, then a different viewpoint is
provided, and perhaps a different interpretation of the city is had. For example, a
painting (one medium) can provide one viewpoint, the map another. Compared to
‘standard’ maps, like street directories and topographic maps, artistic interpreta-
tions can provide completely different viewpoints of a city. Users are provided with
different platforms from which to view ‘reality’.

With the current provision of ‘conventional’ maps (including conventional maps
delivered on mobile devices and the world wide web (web) the question arises as to
whether the users of conventional artefacts for depicting geographical information
only being allowed to view information using one particular type of hard/sharp
‘pencil’ drawing? Would a better understanding of the real world be had if many
different methods for its depiction were made available? It is argued that the present
devices for viewing the complex relationships that comprise the real world, even with the application of new technology, still only allow users to see that information in one manner – the hard, precise, sharp pencil manner that is a legacy of paper mapping. It is further argued that there is a need to investigate how the use of other, ‘softer’ presentation methods that complement today’s generally ‘hard map’-biased devices portray geography and the mental images of reality constructed.

2.2 Science and Technology and Restrictions Imposed on ‘Art’ in Cartography

Science and technology has provided cartography with the means for providing accurate maps in a timely and efficient manner. However, at a cost – the loss of control over part of the design process. In order to apply technology to map production and replication cartographers were required to amend their documents so that they accorded with the technology used to produce them or to communicate the geographical ‘message’. This section of the paper looks at some of the technologies adopted by cartography and how they affected the actual design of the map.

2.2.1 Printing

Aligned to paper map production, printers became part of the map production team and in many ways they dictated the ‘look’ of maps for many years due to their technologically-imposed specifications on the map production process. Map design had to follow function and Cartographers had to adapt design and production to take into account the particular restrictions which printing placed on maps. Printing ‘formalised’ map design and the actual ‘look’ of maps reflected this.

However, it must be noted that many maps produced via the printing press do have a certain quality that can be termed ‘elegant cartography’. Here, the precise replication of detail provides a map that, whilst still designed to conform to the demands of the printing press, were completed to a high standard which can be admired as excellent examples of the cartographers work and the engraver’s skill.

2.2.2 Introduction of Computers

With the ‘invention’ of the computer everything changed in the scientific world, including cartography. Cartography applied computer graphics for artwork production and output. Unfortunately many early inferior map products produced with these early computer systems were readily accepted as substitutes for the precise and elegant scribed and printed alternatives only because they were produced
quickly and by new computer systems. Just because the results of many calculations could be displayed using the newly-adopted computer drawing packages, users were sometimes willing to accept the initial crude outputs only because they were produced quickly and from data which resided on a massive database.

Examples of these maps were ASCII (American Standard Code for Information Interchange) maps, maps produced by the output of simple maps, with variations in greytone density achieved by overprinting characters on a black and white printer. The demands of this method of map production, made the map design accord with the replication technique. The resultant maps were ‘chunky’ and almost illegible when more detailed information was needed. Figure 2.1 shows a typical example of this map production era.

As long as the products were not exposed to too much critical analysis all appeared to be well with the carto-graphics. But, still, some below standard map products that resulted from the attempts to portray spatial information using early computer graphics systems were foisted onto the user. However, once mastered, the technology can provide beautiful maps.

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**Figure 2.1**

ASCII map of Scandinavia. Source: University of Utrecht, 1998
2.3 Discrete Media

The introduction of discrete media saw maps being produced on CD-ROM. Initially, the potential of the large storage capacity of CD-ROMs for the distribution of geographical information fostered interest in publishing digital maps using a new medium (Rystedt 1987). Products like the Digital Chart of the World (DCW) and the World Vector Shoreline (Lauer 1991) were some of the first products to exploit this storage medium. The initial products mimicked their paper cousins, but later products on this medium added interaction and user tools. In the street directory genre, British company, Nextbase produced a street directory of London. Whilst this product provided innovative inclusions like layers of information that could be turned on and off, enabling information to be made available when required, enhancing what could be immediately viewed – an apparent electronic version of a paper street directory (see Figure 2.2). However, what was produced was still a ‘standard’ street map – with interactivity added. The media was not fully exploited and the maps were only electronic reproductions of paper products.

Later, the appearance of Desktop Publishing packages made every graphic artist a cartographer. A flood of ‘crude’ (from a design and consumption perspective) computer generated maps depicted everything about everywhere. This relatively recent transition of mapping from large electronic purpose-built systems housed

![MapVision Plus (Demo)](image)

**Fig. 2.2.** Nextbase London Street Directory. Source: Sargent, 1994
in a map production company to individual desktop has also been a revolution for small map producers. Individual cartographers were able to produce maps as sophisticated as their corporate counterparts. Equipped with a powerful microcomputer plus a scanner, plotter/printer and modem the individual becomes part of the distributed digital electronic mapping community.

2.4 The Web

The arrival of Web publishing initially mimicked somewhat the maps produced in the early applications of CD-ROM. Paper maps were scanned and collections provided on this optical media. Maps weren’t designed specifically for the medium and ‘compromise’ products resulted. Early Web mapping sites provided access to map collections. These were initially scanned maps, like those in the CIA World Fact Book (https://www.cia.gov/cia/publications/factbook/docs/refmaps.html) and the PCL Map Collection (http://www.lib.utexas.edu/maps/). Whilst delivered immediately, these maps provided low resolution replications of maps that were printed on paper in higher resolution than the 72 dpi computer screens on which they were displayed. A typical map availability query and resultant map from the PCL collection is shown in Figure 2.3.

Later, as bandwidth improved and map designers addressed the Web as a real publishing media products did improve from a design viewpoint. Maps were

![Figure 2.3. Access interface and map of Australia from the PCL map collection. Source: http://www.lib.utexas.edu/maps/australia/australia_rel_1999.jpg](http://www.lib.utexas.edu/maps/australia/australia_rel_1999.jpg)