CARTOGRAPHY AND SUBJECTIVENESS

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TÉRKÉPÉSZET ÉS SZUBJEKTIVITÁS

Összefoglalás

A kartográfiai döntéseket, munkafolyamatokat és termékeket a szubjektivitás nagymértékben befolyásolja. Ez ellentétben van a modern tudomány sok területével ahol a tudományos munkák minden szakaszában megkövetelik a maximális objektivitást. A tanulmány elsőként Platón barlangi allegóriáját mutatja be, amely a szubjektivitás dilemmáját már a korai időkben felvetette. Ez rámutat olyan esetekre, ahol az ábrázolás szubjektivitása még inkább szándékos, és szemlélteti a térképészet nehéz helyzetét a két szélső helyzet, az objektivitás és a szubjektivitás között. A térképészet úgy kerekedik felül ezen a kihíváson, hogy szabályokat alkot, amelyek leírják a földrajzi adatok kezelését s azok ábrázolásának módját. De a térképi ábrázolásnak vannak helyi, kulturális, sőt személyes vonatkozásai is. A térképek absztrakt természete akár új (virtuális) valóságokat is létrehozhat, amely a való világ értelmezését is befolyásolhatja. A tanulmány az új médiatechnológiákon alapuló jelenlegi és jövőbeli térképek absztrakcióinak áttekintésével záródik.

Summary

Cartographic decisions, workflows and products are influenced by subjectiveness to a large extent. This is in contrast to many domains of modern science who claim a maximum of objectiveness in all steps of scientific work. This paper first describes Plato's allegory of the cave which defined this dilemma of subjectiveness already in a very early time. It presents cases where the subjectiveness of presentations is even intended and shows the difficult case of cartography in-between the two extremes of subjectiveness and objectiveness. Cartography overcomes this challenge by defining rules how to process geographical data and how to represent it. However there are still regional, cultural and even personal specificities of map representations. The abstract nature of maps can even create new (virtual) realities which might influence the perception of the real world. The paper closes with an outlook on current and future map abstractions based on new media technologies.

Tayloristic objectiveness

Modern science claims a maximum of objectiveness. Methods and results based on subjectiveness are suspect to the scientific community. As a prominent representative of positivism, Frederick W. Taylor, the founder of the science of management can be mentioned. In 1911 he argued „that technical calculation is by all means superior to the human judgment; that one can principally not trust to the human discernment, because it is affected by vagueness, ambiguity and useless complexity; that subjectivity is obstructive to clear thinking; that something which cannot be measured is either not existent or valueless; and that the personal matters of citizens of a country are best be guided by experts" (Postman, 1992). In this respect the American social critic Neil Postman states that today a large part of science and technology is dominated by these (tayloristic) ideas. In his book, he analyses and criticises this so-called „Technopoly", he even proves its disability to work at long sight.

Subjectiveness in Plato's allegory of the cave

These thoughts let us think of the Greek philosopher Plato who explains in his famous „allegory of the cave" (see below) that things and phenomena which we perceive as part of the „real world" are only projections of largely unknown facts and coherences. Thus we can only perceive apparitional, distorted fragments of our environment. However Plato's interpretation is quite elitist since he assumes that the philosophers who have escaped the cave and have seen the „light" know „the truth" (Taylor's experts!). But it is almost impossible to enlighten the remaining „ignorami", they would rather like to stay in the dim cave.

Plato's allegory of the cave

Imagine prisoners who have been chained since childhood deep inside a cave. Not only are their limbs immobilized by the chains, their heads are chained as well so that their eyes are fixed on a wall. Behind the prisoners is an enormous fire, and between the fire and the prisoners there is a raised walkway, along which shapes of various animals, plants, and other things are carried. The shapes cast shadows on the wall, which occupy the prisoners' attention. Also, when one of the shape-carriers speaks, an echo against the wall causes the prisoners to believe that the words come from the shadows. The prisoners engage in what appears to us to be a game – naming the shapes as they come by. This, however, is the only reality that they know, even though they are seeing merely shadows of images. Suppose a prisoner is released and compelled to stand up and turn around. His eyes will be blinded by the firelight, and the shapes passing will appear less real than their shadows. Similarly, if he is dragged up out of the cave into the sunlight, his eyes will be so blinded that he will not be able to see anything. At first, he will be able to see darker shapes such as shadows, and only later brighter and brighter objects. The last object he would be able to see is the sun, which, in time, he would learn to see as that object which provides the seasons and the courses of the year, presides over all things in the visible region, and is in some way the cause of all these things that he has seen. Once thus enlightened, so to speak, the freed prisoner would no doubt want to return to the cave to free „his fellow bondsmen." The problem however is that they would not want to be freed: descending back into the cave would require that the freed prisoner's eyes adjust again, and for a time, he would be inferior at the ludicrous process of identifying shapes on the wall. This would make his fellow prisoners murderous toward anyone who attempted to free them.
(The Republic bk. VII, 516b-c; trans. Paul Shorey; Text taken from Wikipedia)

Subjectiveness in science and art

But also the further processing of information is influenced by subjectiveness. In order to better describe objects, phenomena, and processes, scientific modelling methods are applied very often nowadays. They are also in the broadest sense an expression of the „insufficiency" of the human perception. In art the subjective representation of impressions of the environment is even adopted as ultimate principle. It is the rationale for the individuality of all artwork. Of course the degree of abstraction can be altered, even in various dimensions: Realism, Classicism, Romanticism, Impressionism, Expressionism, Abstract Painting, Pop Art, Photorealism etc.

Objectiveness and subjectiveness in cartography

Cartogaphy is positioned in the midst of the area of conflict between objectiveness in the Taylorian sense and subjectiveness of Plato's allegory of the cave. In essential parts, cartography is diametrically opponent to absolute objectiveness like hardly any other scientific field. This might also be the reason for recent criticism towards cartography („missing objectiveness", „design instead of stringent methodology") from neighbouring scientific domains like GI or Environmental Sciences.

Although the term „virtuality" is only widely known since the rise of computer technologies, maps are since the beginning of human mapping activities subjective, abstracted, virtual representations of objects, phenomena and properties of the world. To some degree, cartographers make use of „fuzzy", „subjective" methods in order to produce maps. During editorial work and designing of a map or a map-related representation, information can never be compiled, selected, modelled and represented in a complete, comprehensive way. The only objectiveness or truth does not exist. There are always several aspects of those terms which must be considered, such as precision, completeness, resemblance to nature (realism), etc.

Another important factor is the „personality of the editor (…). Usually there is not only one good [cartographic] solution, but there are several suitable possibilities" (Baumgartner, 1990). The „art" of cartography is to carefully weight and balance map elements and other influences during the map design process. Speaking about topographic maps, Rudolf Knöpfli, former Vice-director of the Swiss Federal Office of Topography remarks that in a first step it is essential to clarify „which [terrain] properties for the project to be considered are of special importance" (Knöpfli, 1990).

Cartographic rules and symbolisation

In cartography one is aware of the insufficiency of subjectively „tinted" methods and one tries to mitigate it as much as possible by objective rules and workflows. Therefore on faces the problem – or better: the challenge – of unavoidable subjectivity by a certain standardisation: Defined workflows for data compilation, editorial work and drawing instructions for the graphic processing are the most important aids. Starting point of these standards are again subjective definitions, if one considers for instance the diverse conventional signs of National Topographic Map Series in different countries. They prove different content- and design-related views and with that regional and cultural „tastes", traditions and opinions. This problem is evident in every map and even independent from the chosen map medium.

On a more abstract level, Bertin (1967) first defined in his „Sémiologie graphique" a „set" of so-called Graphical Variables with which the properties of all graphical map

elements (point, line, area) could be parametrised. The proposed and today widely accepted variables are place, size, lightness, colour, orientation, form and texture.

Cartography creates new realities

At the beginning of every map project one has to ask the question about the aim and the final use of the map. Out of a large amount of base data the relevant information must be extracted. Traditionally, the selection of the map content and its graphical representation are separated (map editor and cartographer). However, an interaction of content and formal aspects should be considered when designing thematic maps. The main working step in this design process is the search for an adequate representation of the selected basic information. If one chooses the use of the map as main idea, then this step is more than just a simplification and combination of elements of the basic data set or the „reality" of the Earth's surface. „Maps are abstractions. (…) In a map, (…) the messages are represented by abstract features." Abstract feratures are those „with which the properties (…) of the area belonging to the selection can be [described] most characteristically for a specific purpose." (Knöpfli, 1990). The Swiss cartographer Eduard Imhof once stated in an interview that maps in fact even represent their own realities by creating new „terrae" which are up to a certain point independent from the „real world".

Outlook: Map use today and future map abstractions

In general one can observe in the last few years a certain simplification or even „trivialisation" of conventional map products. The causes are manifold: Maps are no longer produced by trained cartographers but more often by graphical designers or even laymen; Maps must be produced fast and at low cost, especially for the mass media; and apparently there is a certain overstraining of the „modern" map user when reading classical maps. The latter is probably caused by a surplus of information and the increasingly missing instruction of map use in schools and in the army and not by a decrease of quality of the existing map graphics.

On the other hand, the presence and use of map data has generally increased. Maps are an established communication channel both in conventional and new media. Instead of structuring the map content by classical means with selection procedures and according to design rules, information as such (also non map data) is „generically" structured, e.g. in databases. Thereby, objects are enriched by thematic attributes such as age, use, owner, etc. One can specifically search for certain attributes or combinations. The cartographic visualisation follows right after the query by using predefined design and symbolisation rules. The set of graphical variables can be extended by further definitions allowing for instance the output of cartographic information in spoken words (e.g. „turn left" in a car navigation system).

The old „conflict" between subjectiveness and objectiveness in cartography and other knowledge domains still remains the same. On one hand the amount of data is constantly growing and the effort to structure the data and to convert it into information and knowledge resembles to a real „work of Sisyphus". On the other hand significant progress in structuring data by adding semantics to it can be observed, such as the different domain specific XML dialects for data description and modelling. Cartographic knowhow and rules more than ever play a vital role in this demanding task.

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