

Map

A map is generally defined as a representation of all or part of a terrestrial surface area on a flat base or plane. Numerous dictionaries and contemporary technical works are more or less in line with this definition. However it can be considered inadequate, both because it assigns the map to a category, and because in this definition there is a shift between what a map is and what it shows. The object is approached via its content and not via its intrinsic nature, or the mechanisms whereby it has meaning. In addition, a map does not represent terrestrial space, but merely some of its features, or some of its related phenomena, whether material or abstract. It can also represent non-terrestrial spaces. And finally the very notion of the flat base can be questioned: there are indeed maps in relief, and other material objects that serve as maps.

Ever since the map has been associated with a geographical acceptance, that is to say since the 16th century, it has given rise to hundreds of definitions. And yet the working-group of the International Geographic Association is still today entrusted with the task of proposing a definition that can satisfy the community of specialists. The recurrence of this lexicographic task can be explained by the plural nature of the object "map", at once cultural and historical. How can extremely diverse realities be fitted into a single, simple mould of definition? How can the successive strata of definition, ranging from restrictive to more comprehensive acceptations, be incorporated? Restrictive definitions require the delineation of a coherent corpus within a set of heterogeneous objects, and thereby present the disadvantage of excluding a certain number of objects that are indisputably cartographic; they are also often ethno-centred, that is to say they are set out in reference to a dominant map model. The wider acceptations on the other hand enable inclusion of various forms of maps, and open up towards non-western or non-scientific cultures, but their failing might be that they are too vague, and encompass spatial representations that are not clearly cartographic.

It is from the 1960s that the criticisms of the classic definitions were taken into account by proposing more extended definitions. Thus the representation of celestial bodies and spaces was included, in addition to the representation of the terrestrial surface. The various modes of cartographic expression were also detailed (visual, and also digital and tactile), or again the semiotic functions of the map. More recent definitions attempt to integrate both the most modern types of map (hyper-maps, virtual maps, anamorphoses, etc) and multicultural versions of the map, since the word map has been used to refer to non-graphic spatial representations in traditional societies, whether concrete objects, songs, ritual, dance, etc.

These claims to the extension of the concept are partly attributable to "cultural studies", but they are also the result of an unwarranted assimilation of all the products of cartographic activity (or even the activity of representing spaces) to maps. Yet there can be cartographic activity without any map being produced, but rather a globe, a cross-section, a 3D model, a mental image, an artefact, a geographical garden, etc.

So what is a map? The definition must encompass the plurality of representations, the varied historical types and forms, and also innovatory contemporary forms. To restrict cartographic (and geographical) reflection to a single map model would obviously be meaningless in scientific terms. Nevertheless, without rejecting the intercultural dimension, the polysemic range cannot be unlimited. Either "map" becomes a generic word covering an indefinite category, including an Aborigine toa, the dance of bees and road signs alike, or we have to agree to restrict the definition to the realities commonly referred to as maps, even if this means leaving on one side a few mixed or exceptional entities. If the second alternative is to be chosen, one must be aware of the anchorage, both cultural and historical, of the defining elements put forward.

The map is no doubt a representation, but this word has a dual connotation. It refers at once to the mental image or figuration that relates to something, and to the process whereby that figuration is created. It is preferable to distinguish these two meanings by referring to the map as a category of images and the product of a representation.

The map is a concrete, stabilised image. This excludes virtual, potential, or ideational representation from the category. A database containing spatial information is not a map, neither is a mental map, except in the case where it gives rise to a concrete figuration. It is true that, initially and fundamentally, the map is an abstraction of spatial reality, but that reality needs to be modelled and coded for the map to be apprehended visually, and to lend itself to social communication or experimental study.

Is this formal system flat, can it be assimilated to a plane? Certain objects referred to as maps have three dimensions: thermo-formed plastic sheets, models in natural materials, etc. If a relief model is accepted as a map, it is hard to see what logic could warrant

excluding globes. Yet at the outset the word "map" was derived from "mappa", a piece of cloth, and the French "carte" from "khardtès" or parchment. It can be thought that one of the constitutive elements of the map is the operation of projection of geographical space onto a plane, in other words passing from three to two dimensions. The map is nonetheless, ultimately, a material object and not an abstract mathematical plane. Thus surfaces that can be "assimilated to a plane" must be accepted as maps, i.e. surfaces that may have a certain thickness, or unevenness (for instance engraving), which do not however in themselves bear any particular meaning.

The map is an object that is second to another that it represents (or re-presents) in compliance with particular rules. What are these rules, and in what way do they enable a map-image to be distinguished from any other category of image, drawings, photographs, satellite images etc?

The map is not a recorded image, it is a manufactured image, resulting from a human creative effort. This creation proceeds from a creator's choice of phenomena to be represented, and then of a mode of graphic symbolisation. Thus the map is not the neural reflection of an external reality, but a construct. It is orientated, selective, partial in either sense of the word, true or false.

The construction of the symbolic image requires a series of operations:

- projection, that is to say the establishment of a mathematical correspondence between points on the reference surface and points on a plane, or a surface that can be developed to form a plane.
- miniaturisation, or the application to the phenomena of a process of reduction, according to a chosen scale.
- generalisation, which is a process of simplification of spatial information rendered necessary by the reduction.
- coding, that is to say the choice of conventional signs or symbols to "translate" the information selected.

The final product can be viewed as complex semiotic system, a space transcribing another space, using differentiated codes: iconic, linguistic, "tectonic" (reflecting the relationship between the graphic space and the geodesic space), and so forth.

The operations mentioned here enable distinction between the map and the perfect analogue such as a recorded image, or other categories of images like drawings, panoramas, or perspective views of landscape. The taxonomy must however recognise the existence of mixed forms, whether they be maps integrating portions of satellite images (spatio-maps), satellite images complemented by graphic elements, maps showing certain elements in elevation, or perspective views integrating fragments of plans.

Several questions nevertheless remain. Firstly, if the operations described above are attached to the map, the postulate is that a map can exist only in the representation of a concrete geographical space that can be projected and miniaturised. What then becomes of maps of imaginary places, mystical or allegorical maps? While their topology is not at all random, these maps cannot be described as the projected images of a space. It can no doubt be agreed that these representations are maps by mimesis, using graphic conventions commonly associated with traditional cartography, including scale and legends. Thus certain images could be considered to be maps because they resemble maps, by way of their appearance or their function. More generally, it could be said that the map, rather than representing spatial phenomena, spatialises the phenomena it represents, whether these phenomena are spatial, material, or ideational. It proposes an ordering, a spatial reading grid for all types of phenomena, events, concepts, processes etc.

Another issue is the notion of a "geographic constant". The map is often defined as a conforming image, that represents phenomena in compliance with their relative positions (relationships, layout, spacing). This idea could be valid for topographical maps, which represent a series of concrete, circumscribed objects, and also for thematic maps, which are based on a topographic approach. But if the map results solely from a zenithal projection and a reduction relationship, various ancient representations are excluded from the category, flat maps with no projection, or model maps of the Medieval globe type. It also excludes composite representations, not on the grounds of absolute distances between places, but on the grounds of differing measures (time-space for instance). Nor does the requirement of compliance with relative position appear tenable in theory, since it is known that any system of projection distorts distances, surfaces and angles. The map results from a transposition of the analogical type, where classic projection procedures are merely a particular instance.

The definition of the map can only be provisional, and will probably not find any consensus. It is useful to deduce a certain number of minimum criteria, a sort of lowest common denominator: image, plane, symbolic representation... But compliance with an archetype and strict constructional rules cannot be required. It is important not to lose sight of the function of a map, which is to facilitate spatial understanding of objects, concepts, processes or events in the human sphere. These issues of use and usefulness probably extend well beyond the intrinsic nature of the object.

See also:

Choropleth map

Geographical Information Systems (G.I.S.)

Bibliographie

Bibliography

- Andrews J. H., Definitions of the word 'map', 1649-1996, Janvier 1998. <http://www.usm.maine.edu/~maps/essays/andrews.htm>
- Board C., "Report of the ICA Working Group on Cartographic Definitions", Cartographic Journal 28 (2), 1991, 249-250.
- Board C "Report of the Working Group on Cartographic Definitions", Cartographic Journal 29 (1), 1992, 65-69.
- Fremlin G., Robinson A. H., Maps as mediated seeing, North York, Univ. of Toronto Press, (Cartographica. Monograph 51) 1999.