PROTOCOL FOR THE NORMALIZATION OF THE GEOGRAPHIC TREATMENT OF INFORMATION

Tomás Cortizo Álvarez
Department of Geography
University of Oviedo

Technical means available today enable the drawing of graphs, maps, diagrams and networks easier than ever. Moreover, thay can be distributed almost without limitations. However, neither automatic nor voluntary drawing is always correct. This is because graphic construction is a discipline that uses techniques, intuition and the means and rules of graphic semiotics. These allowed me to propose a protocol for quality control and normalisation of the geographical treatment of information (GGTI).

Intuitionaly, it is easy to appreciate the quality or presentation of a graph. However, it is easy to deceive reader's intuition with false friends or by using figures made using well-known software with dubious graphic capabilites

The GGTI proposed here is a normalised technique that does not constrain creativity and interpretation. Same data do not always require the same solution and a solution does not apply to every context.

This graphic treatment of geographical information uses the means and rules of graphic semiotics and the questions of Geography. Due to its limitations, graphic language is not an alternative nor a complement to other languages, it is one more of them. No language exists without grammar, lexic or sign and there is no message without critique. Science has to have a language, at least images that can serve as icons.

Due to its sensible nature, a graph is appearance. It is what is seen, therefore, *if it is unseen, it does not exist*. No matter how beautiful the signs are, if they do not render a message the graph is empty. From an academic standpoint, if there is no message, the graph is useless.

GGTI gives a precise role to style, technique, method and objective. Tehrefore, if there is a method for the graphic treatment of information, it is possible to list the elements that referr to the drawing quality and the normalization basis. These elements apply to the qualities of the information, the variables, the image rules, the technical norms and the graph objectives. After several years of teaching and investigation, I have found that the graphic Semiotics defined by Jaques Bertin (1967) continue to be a valid source to establish the evaluation criteria for a part of the graphs in Geography.

However, this source is not valid for the contents, since the graph is abstracted from the fith element: the concept. Nevertheless, it is acknowledged there are graphs and maps determined by the component they represent.

An enumeration of the control criteria.

INFORMATION ANALYSIS:
1. Identification and account of the invariant and its components.
2. Identifiaction and numbering of the categories.
3. Definition of the organisation level and the implantation system.

OBJECTIVE OF THE GRAPH
4. Target audience and media of difussion.
5. Size and nature of the diffusion medium.
6. A graph to see, to archive, to investigate?
7. Reading: Identification, comparision, generalisation...
8. Understanding level of the target audience.

GRAPH CHOICE
9. Diagram, map, network, chart...
10. Choice and selection of the components.
11. New concept deduction: arithmetic or conceptual.
12. Definition of the quantity scaling, progression rate...
13. Numbers and areas, equivalence ratio.
14. Harmony relation in the two dimensional space.
15. Variable and organisation level fitness.
16. Variables: directions or dimensions.
17. Graph treatment, order, diagonalisation, simplification...
18. Readability and visual information density. New information.

TECHNICAL RULES
19. Definition of the graph size, reduction and diffusion format.
20. DIN norm compliance. Rotulation.
21. Balance between information density and published size.

STYLE
22. Drawing style.

This reduced list is an aproximation to the quality control of the GGTI. By using this rules, graph construction becomes independent of the constructor and complies with the scientific premises, i.e. ist results become verifiables, repetibles and of general aplication.

Careless graph design or the use of automatic software leads to simple translation of data tables, without considering the specifity of graphic language. This usually ends up with the reader obliged to extratc information from the graph due to several reasons. Among them, the lack of a correct information analysis (clear definition of concepts, components and cate-

gories), no data simplification and failure to connect the components to deduce new relations are the most common.

Another common mistake is to try to draw graph elements too near to the data, hoping that it would be easy to see its relation. This ignores the fact that GGTI imposes an irreversible transformation, data are the basis of the relations and information seen in the graph.

The more complex the question, the better performance of a graph. Elemental questions are better answered with a data table. The territorial structure is the guide of tematic cartography, therefore, is always necessary to translate *what is here* to *this place is organised by this concept*. The next step is to simplify the reasoning using the apropriate graph or map, enabling comparisions.

Some graphs are subdued to the technics available today, and boast videogame manners in the tematic cartography context. Blind adoption of techniques means to be on the front line of innovation and, apparently, to avoid the spiral of silence, even though it usually carries tyranny and responsability losses.

Since Claude Shannon defined the bit and established the equations that predict and measure the capacity of a medium to transmit information it is known that the less the noise, the more information that is transmited. Sometimes, in the context of graph construction, *the more means, the less information*. Dealing with GGTI, these principles can be resumed by: *an image only has the information that can be extracted and reproduced*.

Moreover, its eficacy depends on the treatment of the concepts to transmit (selection, simplification and clasification) and the lines used in its graphic treatment. All and all, in the aplication of the rules and means of the graphic semiotics. Without them, images often tend to be no more than noise.