

A WORLD TO BE READ

Cartography in Chôros laboratory

> Use of Maps

Despite a widespread use of maps and geographical information (GPS, weather map...), traditional Euclidean map still has the monopoly to represent the World, for example in education, although this might not be the most relevant way to make the social World readable. Indeed, the rigour of the construction of maps gives them a *reality effect*, moreover, illusion has long been maintained that a topographic map contains all basic information to understand a space. However it is obvious that a map always aims at something, it involves a project and expresses choices (and as a result excludes all other representation possibilities of a space).

> A specific language

A map has a specific language, e.g. a system of signs encoded in an arbitrary manner to make it able to carry messages and to translate the spatial layout that is at stake. The legend is the required medium to make the mapping language readable. Therefore, the map must be thought of as *a representation based on a language characterized by the construction of the analogical image of a space*, with the following attributes:

- tools to identify the concerned space
- one or several cartographic scales
- a concept to commute in an analogical way this space's locations to those of the map
- one or more metrics (ways of thinking and measuring out distances)
- one or more themes (the thematic map content)
- a graphic semiology to represent objects (the legend) corresponding to these topics, and the relations between objects.

> Another space

Each map has its own universe, and implies a double spatiality: that of the referent space, and that of the map. In that regard, maps are a concrete manifestation of the geographical field. A map is not the space, but a map is definitely a space. Since the non-universal character of scales is accepted (Mercator projection, for instance, uses a non homogeneous geographic scale) there is no objection to the use of a different measure than those of Euclidean space to represent spaces (population, GDP...). Therefore geographic scale (the size of a determined space) and the cartographic scale (the reduction ratio) should not be confused. In that way, maps are becoming an empirical field among other for studies in social sciences.

> Understanding the World

These considerations have lead Chôros laboratory to develop an inventing way to put into maps social spaces through cartograms, that are a way to weight spatial units of the map in accordance with a quantifiable variable, different from the geometric surface, in order to find a graphic expression of the constructed character of space.

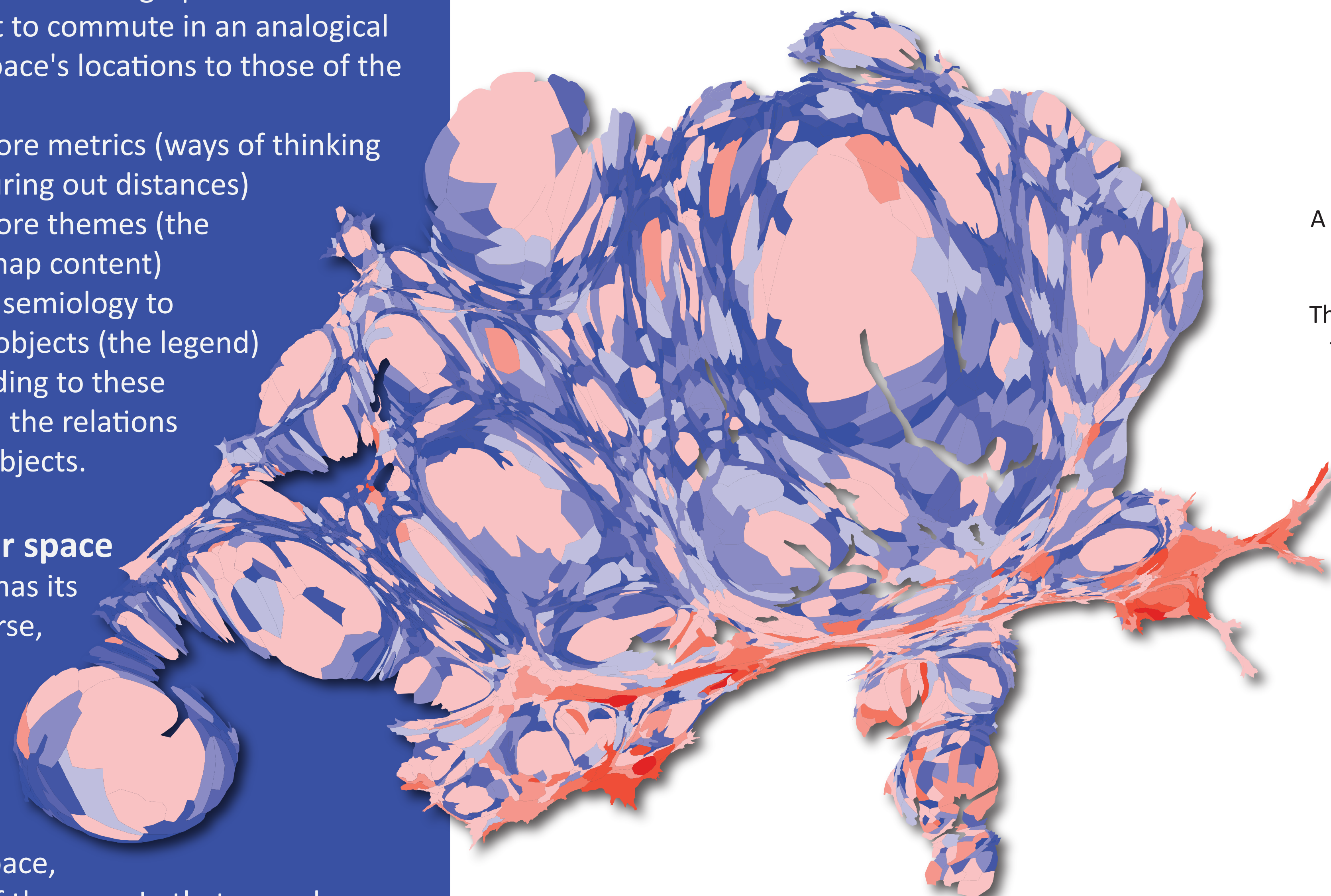
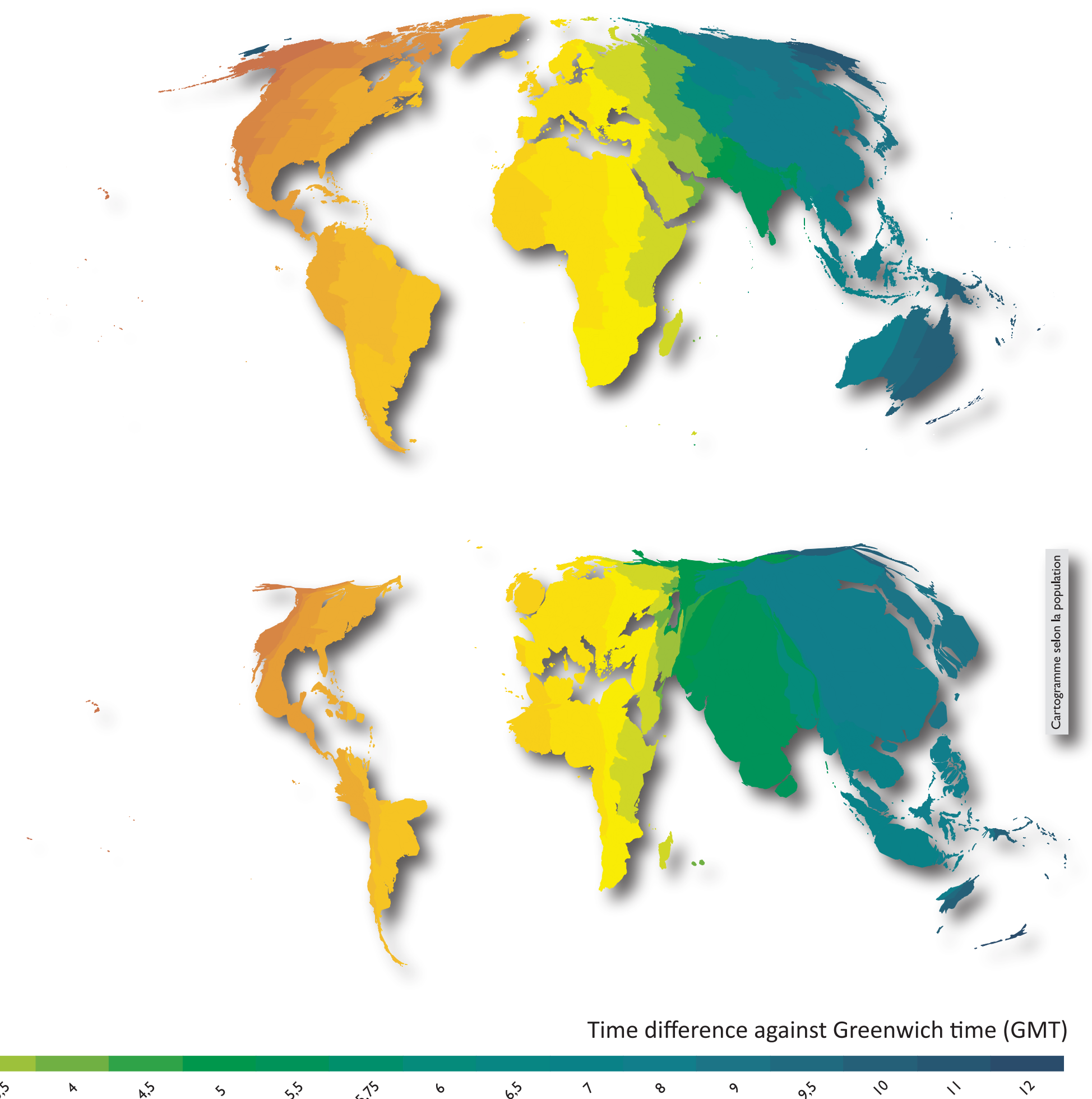
An Image of the World

These maps come from the book *L'invention du Monde*, released in 2008. This work has paid a special attention on how to represent the World by exploring the uses of base maps. A base map can be used on one hand to locate an information, to estimate relative positions, and on the other hand as a background to support information, for instance the paving of geographical areas. Thereof the visual impact of geographical areas depends on their extent on maps and draws an *a priori* view of the World. In order to build a base map that corresponds to the representation of a phenomenon, three settings have to be considered:

- the global shape of the World
- shapes and neighbourhood relations
- visual impact of areas.

But in any case, a graphic consensus has always to be made, because a cartographer only has imperfect resources: projections and cartograms. A compromise has to be found between distortion of the well-known Euclidean base map (and its topology) and observance of the expected visual impact of areas. The upper map represents the time zones on a Mollweide projected planisphere, the lower map represents the population of time zones on a cartogram of states according to their population, based on the Mollweide projection.

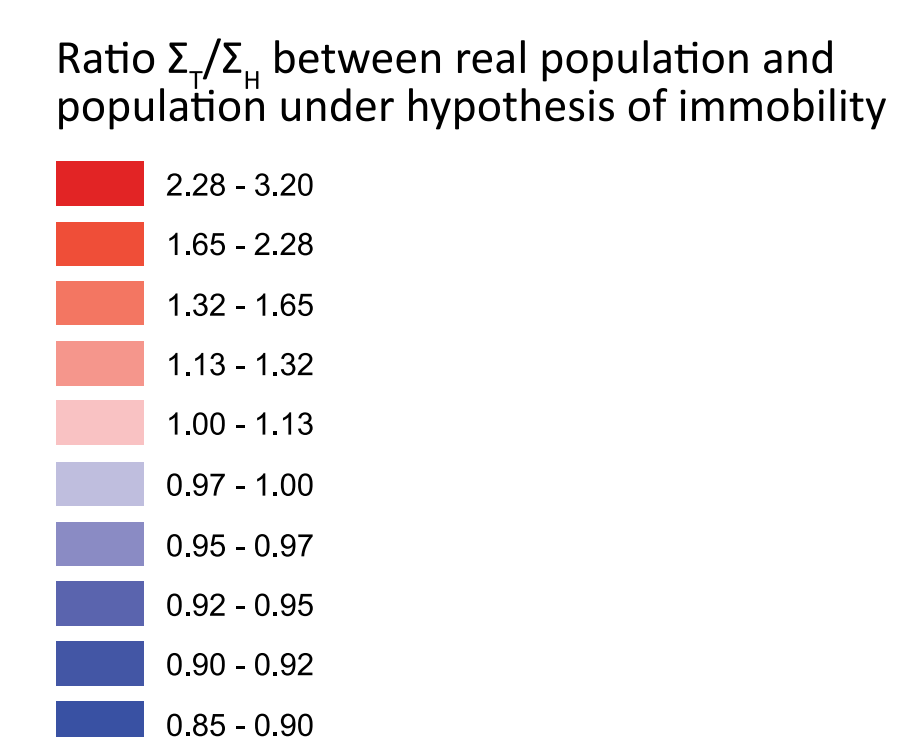
Conception : Jacques Lévy Semiology / cartographic design : Karine Hurel, Patrick Poncet
Realisation : Karine Hurel, Patrick Poncet
Base map : Dominique Andrieu, Jacques Lévy, Patrick Poncet



Swiss Cartogram

Ratio between real population and population under hypothesis of immobility

A 'traditional' map is based on the representation of Euclidean space. Distances and areas on the map allow for calculating distances and areas in the real world, by multiplying them by the map scale. The relevance of an anamorphic map stands in using the map metrics to represent non geometric measurable data, as population or GDP. By this type of representation, we seek to find a better expression of the fact that spaces are socially built.



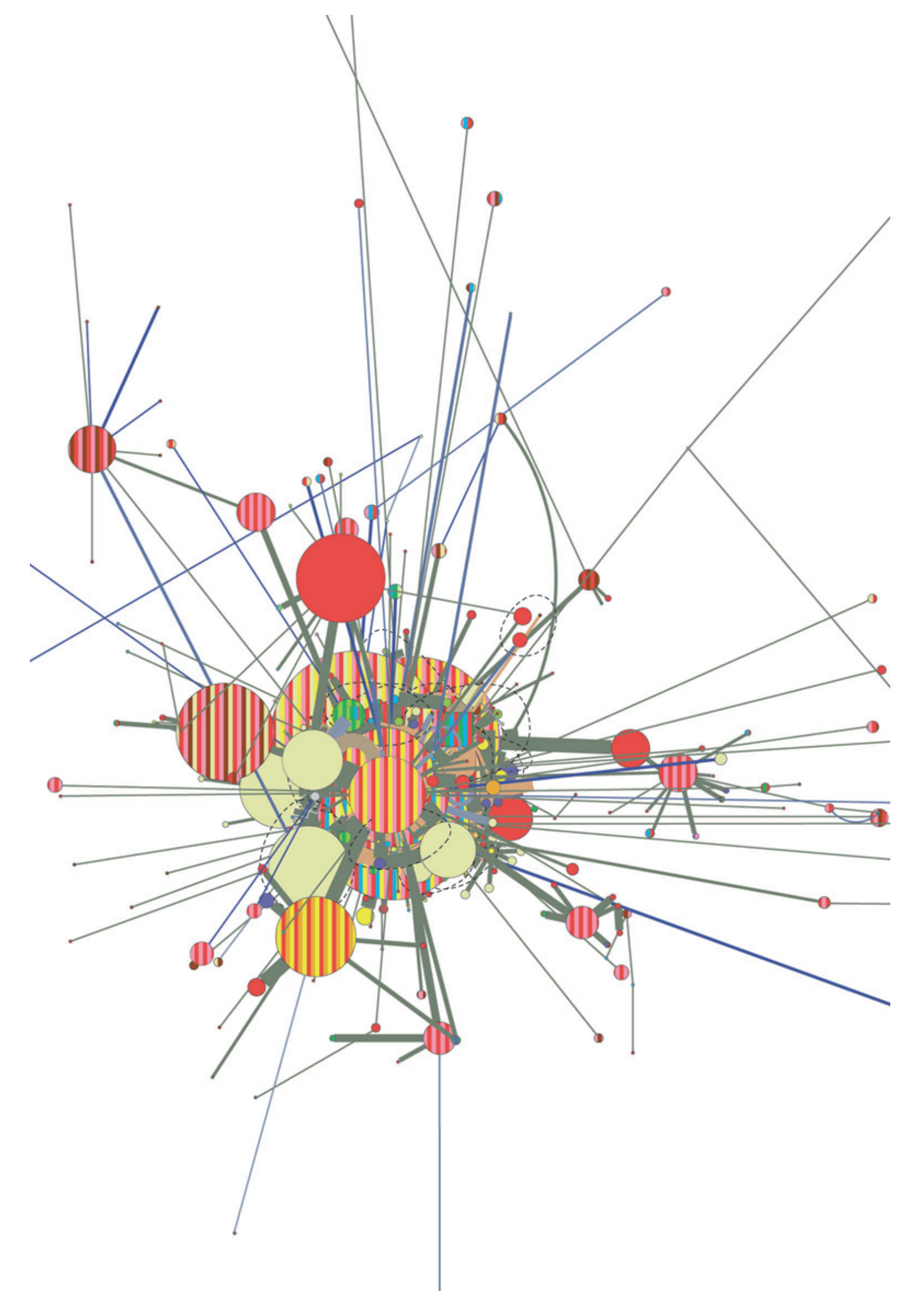
Map : André Ourednik, EPFL-Chôros, 2008
Data : OFS Neuchâtel 2005 ; Martin Schuler, EPFL-Chôros, 2007
Original base map : OFS Neuchâtel 2007
Anamorphose realised with the software ScapeToad, <http://chorogram.choros.ch>

Mobility Map

This map is a one year mobility inventory of persons who have been interviewed within an area. It deals with a backgroundless map (i.e. without base map) with a double metric: The first information is about how places are used, how much time is spent in these places, and the activity carried out in those places. This information is symbolized by coloured circles whose diameter is proportional to the time spent in each place. The second information is about links between those places, time spent to move, and the practised activity during the trip. This information is symbolized by a stroke whose length is proportional to access time and whose thickness is proportional to the number of trip occurrences.

This map is the superposition of all individual mobilities listed in the city of Toulouse. It is noticeable that this city seems to be very aggregated.

This map has been realised with a specially elaborated software.



Conception and realisation: Boris Beaudé & Dominique Andrieu, UMS 1835, Université de Tours, 2002-2003; © projet SCALAB.