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FROM INTUITIVE MAPPING TO CONCEPT MAPPING: AN APPLICATION WITHIN AN ANTHROPOLOGICAL URBAN FIELD STUDY

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Abstract. Concept mapping may be considered as the result of complex processes, which leads to the production of a concept map. Could it not be also used as a tool to explain mental representations, occurring during an anthropological field study? In an experiment conducted in Bordeaux the inhabitants were surveyed on the major transformation of their urban environment using concept mapping. It was also used as a means of interaction. For this particular purpose, concept mapping tools could be improved with new functionalities such as map superposition, layer-based readability ensuring that text does not move while the background is rotated, focusing and foregrounding technology…

1 Introduction

In anthropological field studies on as in urban culture, the anthropologist is brought to ask people about how they represent the things composing their daily environment. He thus obtains stories and/or drawings, more or less explicit. He works directly with the people themselves to characterize the relations between the elements (Winkin, 2001). In such anthropological searching processes, the main problem is to highlight invariants, to link or to separate implicit representations. The anthropologist must focus his attention on “the difference which the difference makes” (Bateson, 1972: 210). Particularly in this case, “we define concept as a perceived regularity in events or objects”.

The central point for investigations is a dynamic system, integrating realities and points of view. This system must be elaborated and displayed in a synthetic way, from an analytic process of identified relationships. The global shape of the system is obtained with the expression of axes, such as a Space-Time axis expressed in a Semantic axis (Revel, 2003). The Concept Map could be a precious tool to display such systems.

It is also a good tool to gather and transform a corpus of inquiry material. Stories given by actors of social events are collected according to a linear mode. The story is often conceived by the actor himself as a linear space: “A space time of the narrative fiction is a mimesis of the lived space time” (Revel, 2003). These stories are delinearized and spatialized in a semantic network. The research worker must create a symbolic form, in order to represent objects belonging to various planes simultaneously. On the other hand, graphic material such as spontaneously generated maps include tensions which are underlined both in graphic and word form. In both cases, it is the implicit mental scheme that we propose to represent.

The question is: How can a formal representation, such as concept map, be generated from the spontaneous productions of interviewed actors? One suggestion is to take into account the dynamic process of map elaboration: one locates opposable tendencies, such as attraction and repulsion, cohesion and dyscohesion, threshold and passage, limit and border... (Lussault, 2003). In this respect, the use of the "elastic" distance is productive. On the field, paper fragments are proposed to the person, who can identify them using letter, symbol, color, etc., place them on the drawing and move them to coincide with the account or the comment which is produced, thus establishing coherence among the various elements.

It is this part of the production of a conceptual space which we will study here, because the interaction between the searcher and the interviewed person needs to be based on a set of operations, which could be facilitated by functionalities of a data-processing tool. This paper describes an experiment of concept map production during an anthropological field study. The context and the operating mode of the experiment are exposed, and examples of concept mapping steps, given. The discussion concludes with suggestions of new functionalities for concept mapping.

2 Production of anthropological intuitive mapping

Bordeaux is a medium-sized city in the South West of France (720 000 inhabitants for the metropolitan area). After twelve years of “pilot” studies, discussions, projects and reports (various and varied), town hall set about

building a tramway network. Work on the project lasted 5 years and transformed the city. On December 21st 2003, the tramway network was inaugurated with a mobilization of the local media. Taking advantage of this media-event, the study was carried out. On that day, people expressed readily their dreams for their city and their emotional reactions after a long wait. They also felt members of a community. From the point of view of cultural anthropology, we were interested in "the difference which makes the difference" (Bateson, 1972: 210). Several teams of researchers recorded on film how users first reacted to the novel situation. The reactions and gestural indications were also recorded through spontaneous, ten-minute interviews of about thirty people who were waiting at a tramway station. Along with data collection, the objective was to work out spontaneous maps which they could comment on and, as the interviews progressed, make more readable. The suggested emphasis was put on a primitive or ancestral vision of the city, seen as an urban organism.

These intuitive maps present deformations with regard to the real space, the known spaces are stretched out using numerous markers, the lesser known or lesser frequented spaces are underestimated. It is these deformations which interest the anthropologist.

Spontaneously, urban space is often illustrated in a form which can still seem analogical and related to a kind of geographic map (fig 1). The “blue moon crescent” in the centre is the usual representation of the river: the Garonne. But the story which accompanies it does not refer to a diagrammatic representation which could be included in a vertical projection: it is a typical urban landscape as seen from a pedestrian perspective with its recognizable landmarks: hills, church spires, bell-towers, etc. By the way, those kinds of landmarks are also proposed to structure the landscape of websites (Forsythe, Grose & Ratner, 1997). In our collected materials, it is thus the person who projects himself or herself in an improbable *topos*, since the place from which one can simultaneously observe reference markers would be a 500 meter-wide river. Among the collected words, some can be integrated into the chart, others, with metaphoric interpretation, explain the steps of the map elaboration. Here, the central point of perspective is in the map centre, and the city is organised as a circular ring which links markers together. When the representation is rotated, one can confirm that the city is organized around this virtual centre of rotation (what the anthropologist will interpret as the true heart).

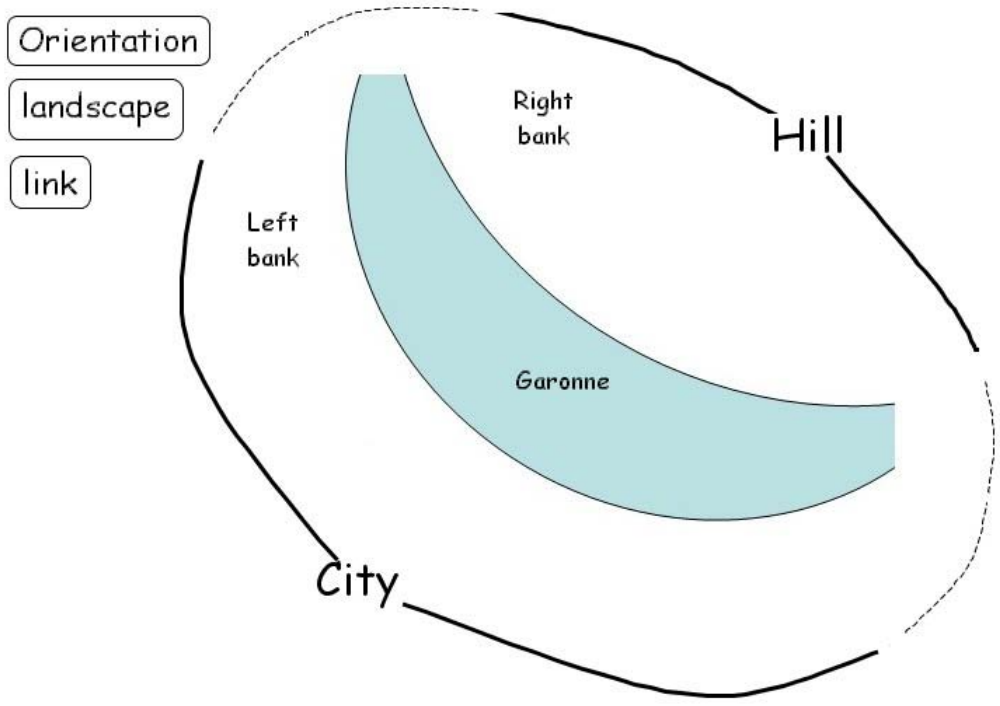

Figure 1. The city as an amphitheatre… or a landscape in which one can be oriented.

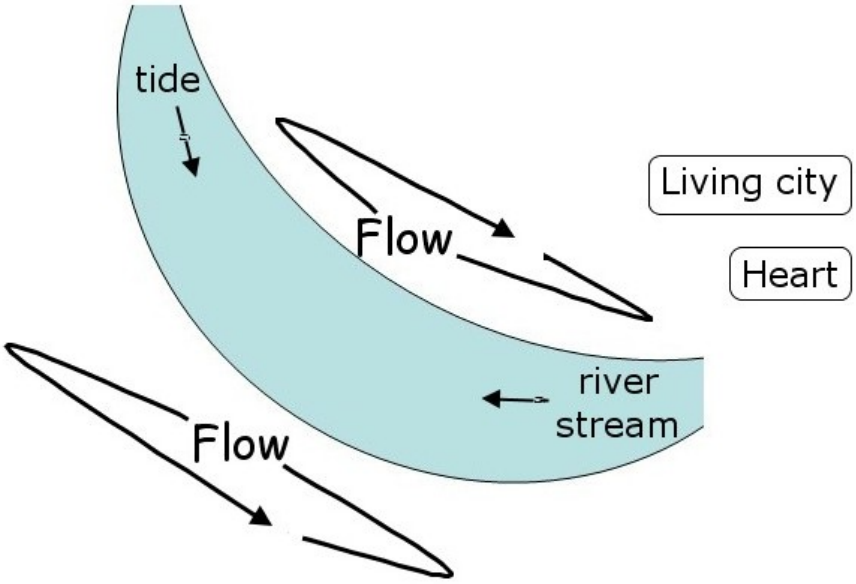

Figure 2. Flows of the city… and vital flow of a living heart.

Another aspect is the urban vital force expressed in the fig 2: the powerful and regular flow of the tide, a significant characteristic of this river, combined with the circular flows of human activity. The city (new, future) puts all these flows in close symbiosis. It is an organization which is described, and the word “heart” expresses the total pulsation, the continuity of a pump, but never a zone considered as the geometric centre of the urban space. From a symbolic point of view, the human multiform bustling arises from the fundamental metrorrhagic pulsation of the river, which is perceived as an urban organism. We would like to illustrate this alliance of rhythms through an animated superposition of circular links and alternative linear links.

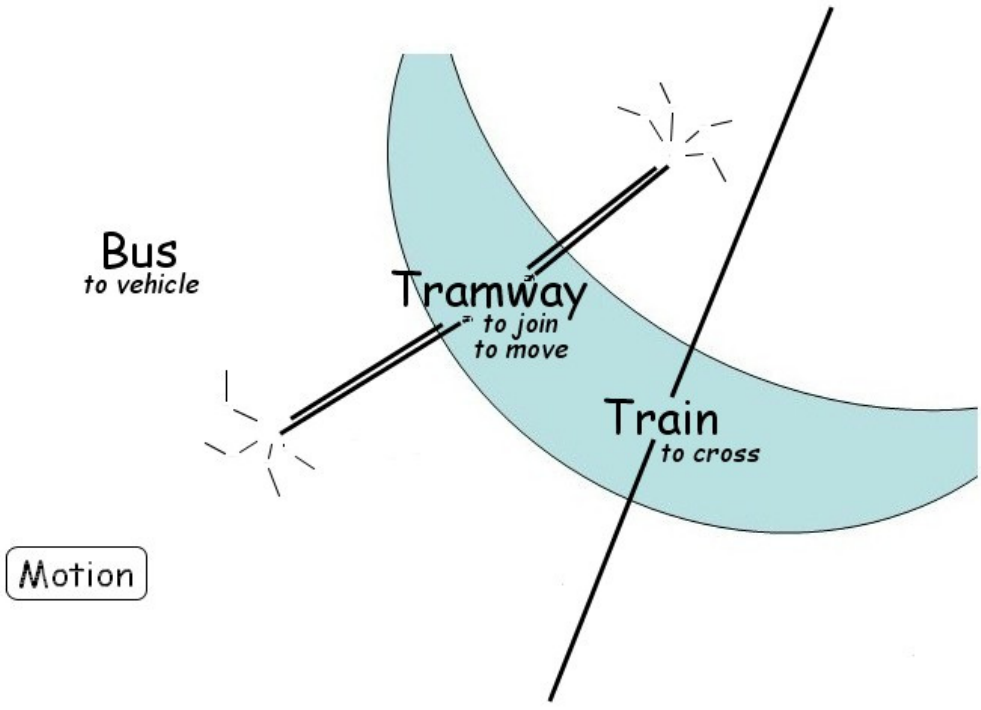

Figure 3. Axes of motion… their functions and their interpretations.

Another approach is related to the directions of the movements (fig 3). For example, the axis of the interurban train is judged as being outside the city. The train does nothing but cross the city and, thus, is perceived as tangent to the city. On the contrary, the tramway seems independent of a fixed axis: with its ramified network, it "serves even the smaller streets". It is assimilated to a moving side walk. In this urban mental landscape, the bus only transports people; it is not beautiful and cannot be inserted in the urban web. In fact, the tramway has the aspect of a train and the function of a bus. Like a bus, it is flexible and light, moves within traffic and represents an alternative for pedestrian, at the same time, like a train, it is rapid, safe and regular. In this humanized vision, the tramway acquires a symbolic dimension, relates to the human body itself and the desire for social bonding. Words such as motion (fig 3) should not be taken literally, but must be understood metaphorically: the tramway network akin to the human irrigation of a territory.

3 Concept map manipulations and expected functionalities

An anthropologist is not a psychologist. He is not interested in the productions of a single person. His objective is to produce a single concept map, which could be the reflection of a collective interpretation of a situation.

3.1 Map and concept superposing

Successive maps are built as recorded testimonies are confronted, analyzed and added. Their common points are brought closer and reinforced. To obtain an overview of what people imagine the tramway to be, we must make a superposition of all maps, in order to overlap all of these pieces of the human imagination.

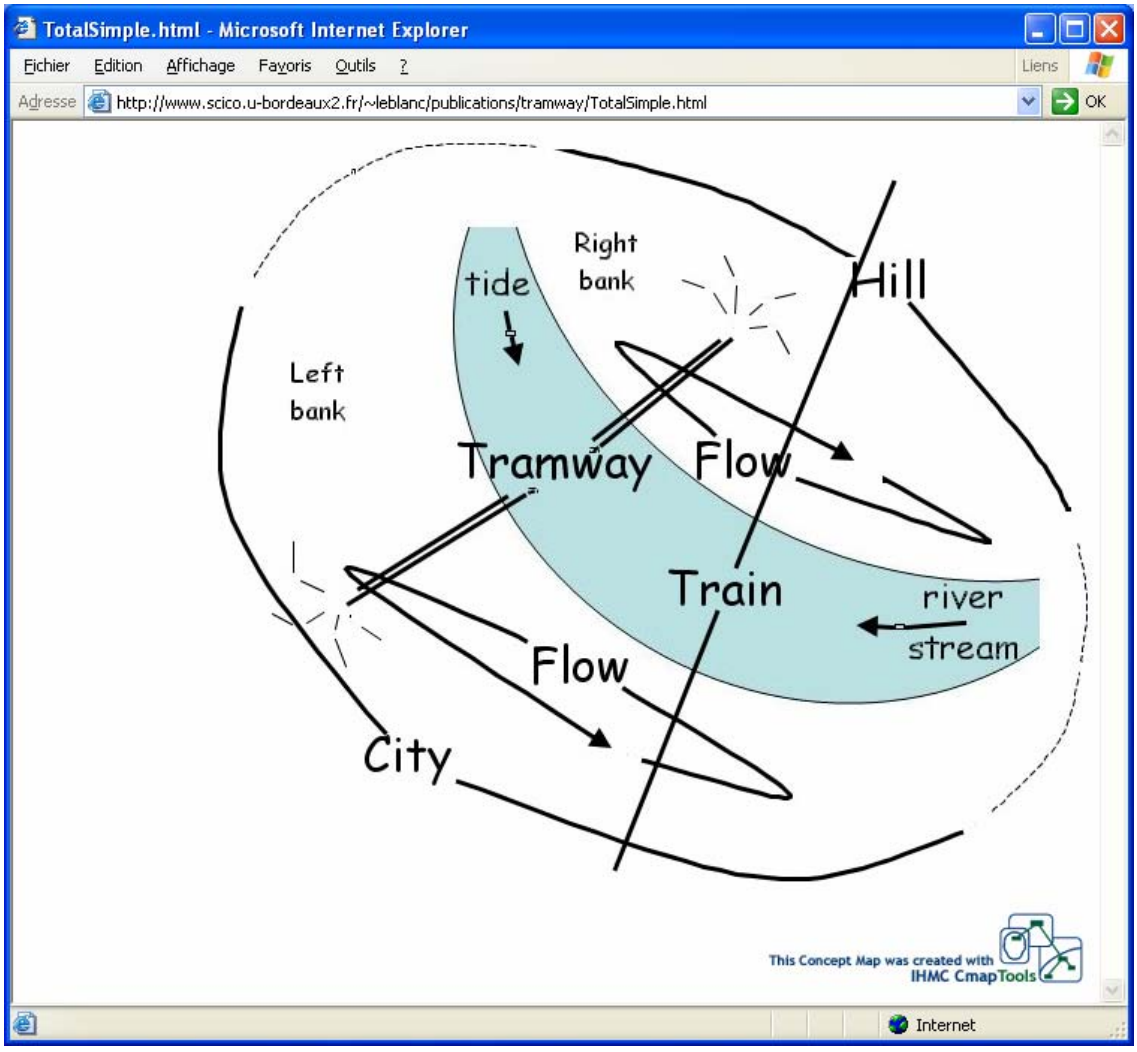

Figure 4. Synthetic pre-concept map.

To produce a synthesis, we assemble different dimensions over a single analogical background by superposition the forces with their tensions (fig4).

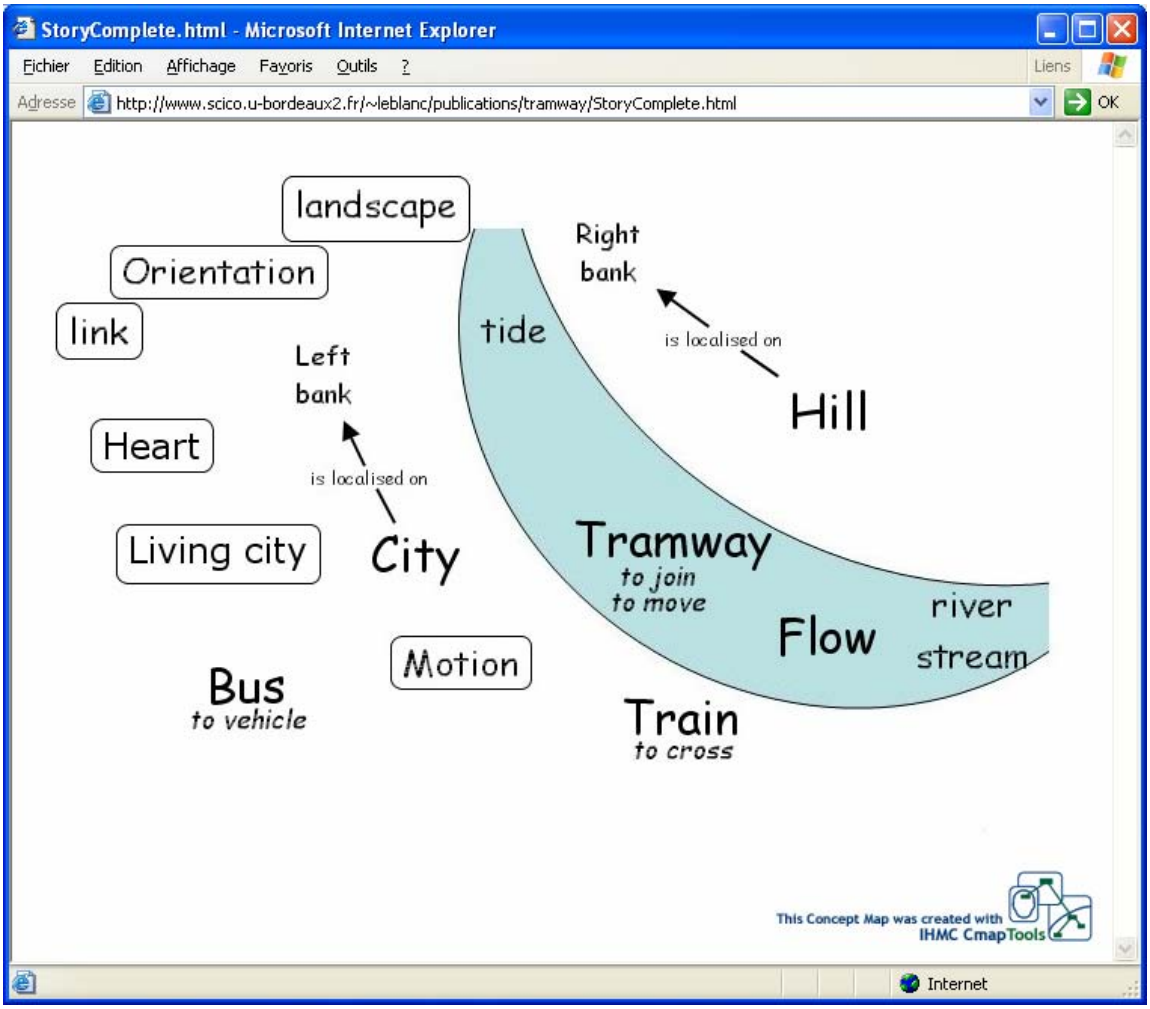

Figure 5. Synthesis combining form, figure and theme.

We then place the descriptors which could replace landmarks or functions from the analogical space to evoke a conceptual space (fig 5). In doing so, the anthropologist seeks to preserve part of the evocative force of the territory in a document which is still analogical, for example this shape of the crescent which is purely cultural, emblematic and is not the result of personal experience.

The common vision (which is in reality a representation of the community) could amount to: the streetcar unites two banks and several worlds including that of the present-day inhabitants of the city. In the commemorative stamp published on April 26th 2004, the painter Andreotto expresses the same feeling, and his design symbolically orders the sketch of a concept map (fig 6). We notice there that noun phrases extracted or reconstructed from narratives do not have the same status: some have a thematic value and refer to a primitive map (orientation, motion, living city).

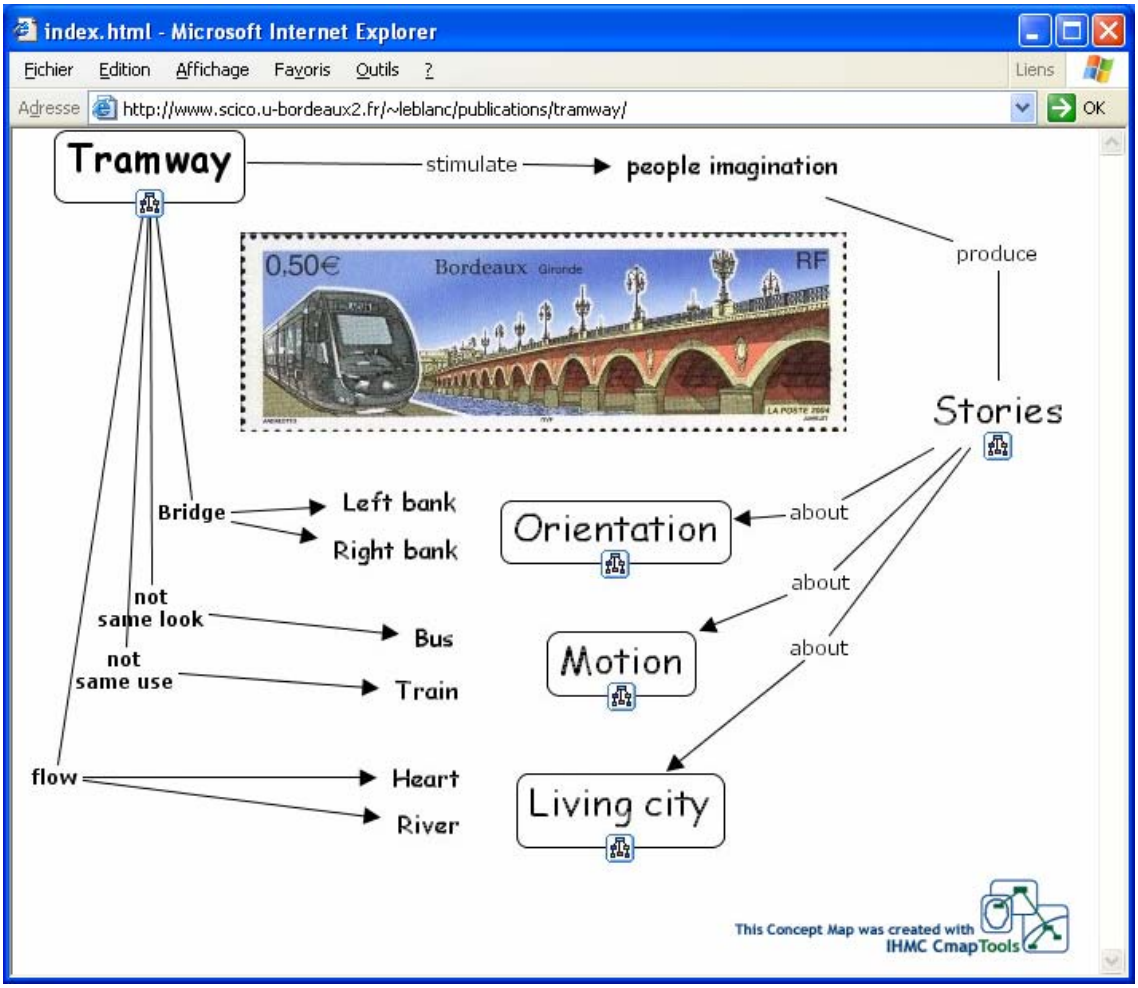

Figure 6. Towards a synthetic concept map.

3.2 Design related operations

We have used CmapTools software to generate all the above-mentioned figures. In the interactive phase of the inquiry the narrative arising from a dialogue takes hold of the map and brings it to life. At this point, it is necessary to be able to turn the map around an axis and, at the same time, to establish from what perspective the represented space is viewed: map, reality or viewer.

The superimposing or the interweaving of links must be possible, as if independent layers were stacked (Platteaux, 1994). How can we make sensitive the simultaneity of activities, places, according to rhythms which generate the territory as a whole? We want to be able to control the appearances and disappearances of elements which are contiguous in the time layers.

The question of metaphors is more delicate: aside from the polysemy of certain words (heart, motion), there are visual metaphors (the crescent) which evoke a cosmology consistent with the circadian rhythms of the tide, the moon, etc.

We could translate them graphically by granting the term a potential dimension which would not be present at the onset and brought to the surface using a pointer.

4 Discussion

It is as if, in some way, the stage of formal improvement established congruence between the thought landscape and the drawn landscape (Bateson, 1979). The passage from forms which are already abstract but make up a mental landscape to a system of spatially related concepts might entail losses and gains (Barth, 1993). In our

case, it seems obvious that the inhabitants share a strong mental representation of their city. To break down its perceived dimensions and highlight its relationships to all kinds of entities shows its richness, but can make it lose its anchoring in a symbolic space system. It would perhaps be necessary to position the conceptual network upon a simplified analogical background, as outlined in the first figures.

In the relationship between of imagery and explanation or comment, let us distinguish (Vignaux, 1998: 60) that which originates from procedures of analytical processing (we describe, we decompose in order to recompose an idea or verbal image of a situation or a space) from that which composes with reality in a analogical way (we represent, we evoke, we draw, we create an image).

The analogical system of production accepts condensation, i.e. the summarizing of multiple sequences of explanations or instructions (Bresson, 1984). It is a process of schematization which produces a synthetic map; its analogical dimension disappearing only in the case of a conceptually "pure" space.

In this case (fig 5), the chaining of the concepts must remain limited; nodes could relate to complementary conceptual layers, devoid of any analogical references. This presentation could be more appropriate for certain cognitive styles, which are characterized by a holist construction of a thinkable space around a simple, self-evocating structure (Riding, 1997). One can also call upon a three-dimensional spatial representation or the use of layers with adjustable levels of complexity.

5 Conclusion and perspectives

The anthropological experiment is closely akin to common interpersonal communication: speech is prevalent on the temporal plane but can also give life to a two-dimensional space. While they are speaking, many people are happy to take a sheet of paper and, with their pencil, connect terms and objects together. In doing so, they find themselves simultaneously interacting on both levels. Especially when it is a question of expressing a strongly interiorized, inherited or mythological vision, like that of the city, an imaginary territory one also travels in dream. It would be useful to go deeper into the study of strategies which correspond to cognitive styles or to schematization profiles (Michel, 1993). In particular, the status of an intuitive map, produced in our scope, can get closer to that of a cognitive map (Me and my environment). The passage to concept map transforms the representation of an analogical space and allows getting closer to the mythical space, where the urban complex space-time becomes subsumed in a founding shape.

6 Acknowledgements

All of the illustrations from this paper are produced with the CmapTools software, downloaded from the IHMC Website at http://cmap.ihmc.us.

These illustrations are available on: http://www.scico.u-bordeaux2.fr/~leblanc/publications/tramway

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