

A Conflictual Co-building Method with Agoræ

L'Hédi Zaher

Institut Charles Delaunay, Université de Technologie de Troyes, FRE CNRS 2848
Laboratoire Tech-CICO - 12, rue Marie Curie - BP 2060, 10010 Troyes cedex – France
hedi.zaher@utt.fr

Jean-Pierre Cahier

Institut Charles Delaunay, Université de Technologie de Troyes, FRE CNRS 2848
Laboratoire Tech-CICO - 12, rue Marie Curie - BP 2060, 10010 Troyes cedex – France
Jean-pierre.cahier@utt.fr

William A. Turner

LIMSI - BP 133, 91403 Orsay cedex
william.turner@limsi.fr

Manuel Zacklad

Institut Charles Delaunay, Université de Technologie de Troyes, FRE CNRS 2848
Laboratoire Tech-CICO - 12, rue Marie Curie - BP 2060, 10010 Troyes cedex – France
manuel.zacklad@utt.fr

1. INTRODUCTION

The goal of the Agoræ software is that of representing a shared conceptual content with a topic map structured by multiple points of views. Co-construction requires ontological decisions: words designate objects which are similar to one another given the properties attributed to a concept.

The context of the projected experiment (called “DKN Project”) (Barré *et al.*) is a set of “mobilization projects” involving Colombian scientists in the plant genomic field. This project supported by UNESCO is conducted the LIMSI Lab. Members of DKN projects can use Agoræ tool as a “plug-in” in a global toolbox serving these projects. In this context we take as an example the Agoræ “demo” map focusing specific activity goals (to represent the conceptual content of the document flow inside the DKN project). We have constructed in the tech-CICO lab this “demo” map for use by members of the diaspora of experts, to allow them to discover and to experiment the features of Agoræ as a tool, and then to apply the tools to their project needs.

In this “demo” map (see figure 1), the classification scheme consists for example of four points of view. Our research question deals with methodology: how to collectively bootstrap the building of such a classification scheme? We present briefly the method and make a series of proposals aimed at custom-tailoring the design of the Agoræ software for the needs of this co-building method.

2. 2. HOW TO CO-BUILD “POINTS OF VIEW” WITH AGORÆ?

We had had, between 2002 and 2005, several experiments of collective construction of multi -point-of-view map with the Agoræ tool, including between distant members building a map via Internet (Cahier *et al.*, 05). With these experiments, we partially validated the possibility of co-constructing a knowledge map with this tool (technically). But the cases of collective cartographic construction studied in these experiments, as well as the methods developed for this purpose, restricted use to situations essentially without conflict, similar to those encountered in a laboratory situation. This was due to the fact that the activity modelled was very consensual and stable, without outstanding social and/or semantic challenges.

Consequently, despite our former experience with modelling collective activity, we had never tackled the question of an intensive use of Agoræ to treat cognitive divergence, even the divergence of opinion during co-construction, i.e. the second question. In the DKN project, a more complete

methodological framework was required in order to use Agoræ for managing the "cognitive conflict" often encountered when trying to co-construct a global representation of joint activity.

The conceptual model Hypertopic used in Agoræ considers in a rather "open" way the problem from different "Points of view". A Hypertopic Point of view is a "beam of cross glances related to a collection of objects". For example, one of the goals of the DKN project is to evaluate "plug-in" software components (such as Spip, Pic, Calliope, Agoræ...) in order to establish their relevance for structuring exchanges over the searcher's Network, in regard of given "mobilization scenarios".

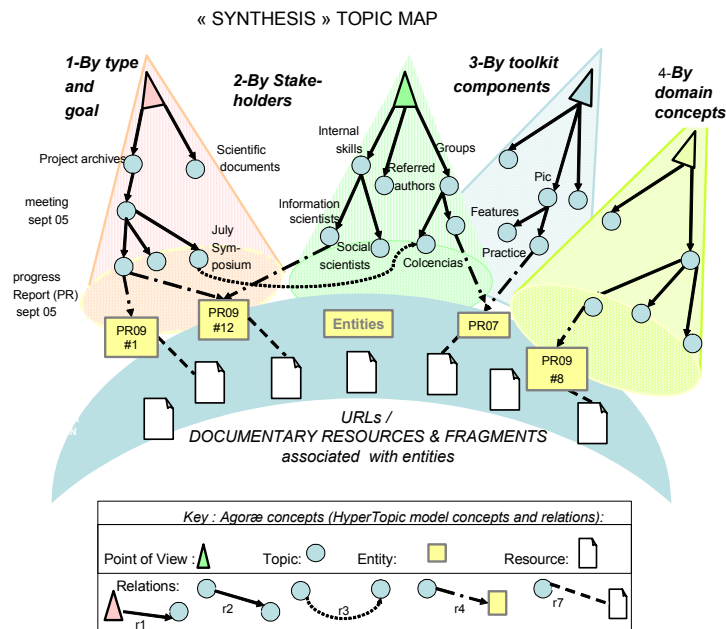
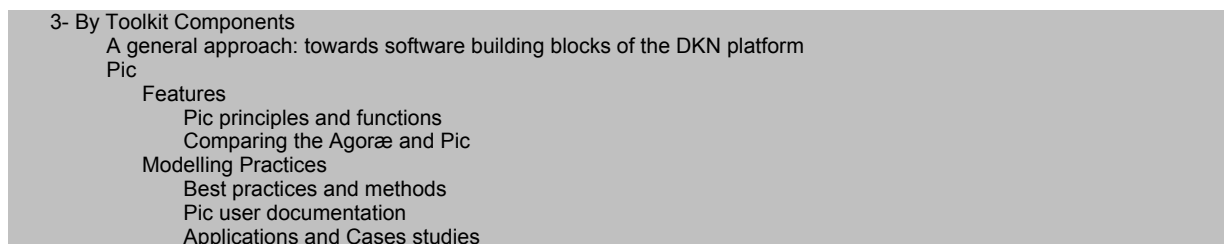


Figure1. Example of the "demo" Agoræ map

To meet this goal, in the "demo" map that we first constructed with Agoræ for use by members of the DKN team, the third point of view is named "3-byToolkit Components". A Map designer suggested that inside this point of view the "Pic" concept could be specified by the following hierarchy of topics:



As we can see in this example, "Pic" takes on meaning in the DKN community context because it refers to a "Toolkit Component" of the DKN project, it has a set of specific properties and functions, it is different to the other software plug-ins used in the project, and implies specific forms of use and specific support needs.

Thus within the group, the map is a means of clarifying several points: what exactly is a "toolkit component"? What cognitive, organisational and sociotechnical issues need to be addressed when software artefacts are used? How did the members of the DKN team perceive the specific properties and functions of the Pic software? Etc.

3. 3. KNOWLEDGE MAP BOOTSTRAP WITH AGORÆ

The method of conflict design aims at facilitating the proposal and convergence for concurrent opinions by externalization via the Agoræ tool. The stage on which we want to concentrate the

methodological effort is a critical stage, corresponding to the more "upstream" part of co-design process for mapping multiple points of view: we call this upstream process "bootstrapping" (starting) the knowledge map. In the proposed method we consider two steps, which produce two very different kinds of map:

(1) A design map, which is a set of "design points of view" on a characterized entity, expressing each one the intentions of a particular actor with respect to the field and the activity.

(2) A synthesis map (or classification schema) which is (as showed on Figure 1) a set of "synthesized points of view" on the characterized entity, expressing an integrated and coherent perspective on the field and activity. The synthesis map translates the plural, generally accepted semantics of the community for representing what is at stake in its on-going collective activity.

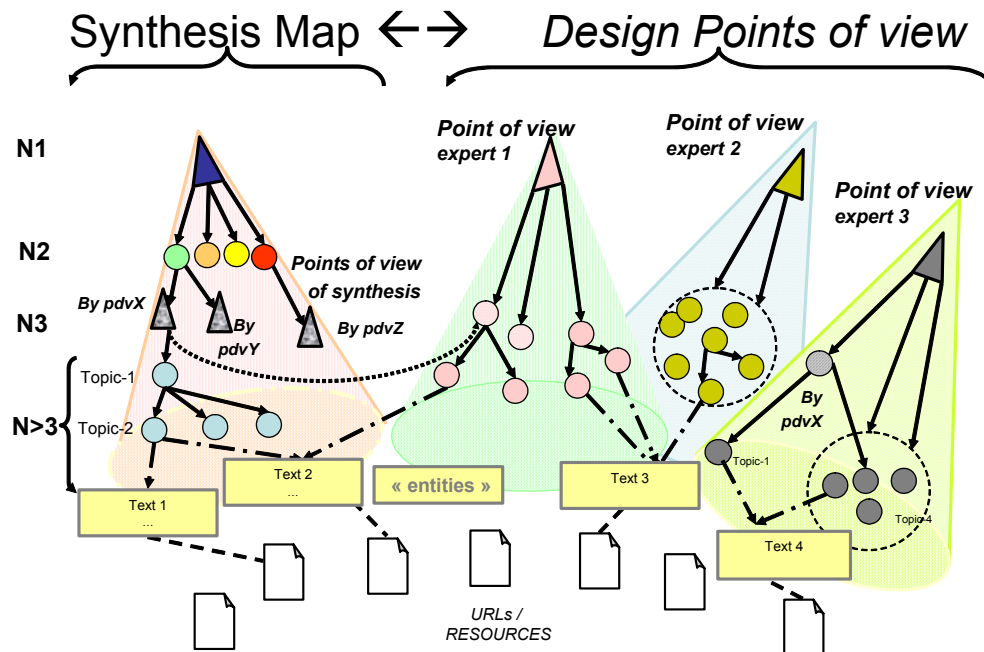


Figure2. Method of conflictual co-design

As opposed to a design point of view, a synthesis map is not related to single actor, but aims at providing a classification schema expressing a community-wide consensus. We expect that conflict will arise in moving from one to the other, that is, from individual semantics, intentions and objectives to a global representation of a situation in which these semantics, intentions and objectives are collectively recognized as being both worthwhile and constitutive of the group's identity.

The method we are developing is designed to focus on this passage from an individual to a collectively coherent perspective on individual differences and interaction opportunities. "Bootstrapping" is essential when attempting to manage this passage because it determines how it will be negotiated. We expect that the co-construction of the synthesis map requires an "institutionalization" of a shared semantics and that, as the map fills, it will become increasingly expensive to retrogress. However, the schema resulting from bootstrapping can also miss its objectives if it becomes rigid too quickly, imposing categories and linkages which discourages individuals from making an effort to articulate their individual concerns with those on the map.

That is why, the method of "conflict Co-design" aims at facilitating the collective bootstrapping of an Agoræ map:

(1) by allowing each member to express his point of view via the tool with topics, entities and resources classified in these topics;

(2) by differentiating among the members of the Co-designer group non experts, experts and particular members who will play the role of regulator or "user advocate" by organizing the work, facilitating mediation and drawing attention to converging representations which can be synthesized;

(3) by helping to visualize with Agoræ the differences in design between individual members of the co-designer group;

(4) by having (at the N2 level, see Fig.2) concepts ("mainstream" , "peripheral" "emergent", "out of scope" to categorize the "centrality" of documents and topics; these concepts are available to the designers and the regulator to express and dissociate their positions.

4. 4. Managing conflicts of interpretation

Agorae provides a representation model that is dynamically bootstrapped and updated by members themselves and serves as a mean of visualizing different points of view and their diachronic evolution, with a particular attention given to managing possible disagreements between geographically and/or semantically distant actors.

In the objectives of this project, we assume that conflict is an essential part of the knowledge production process. It improves group performances when discussions concern such things as how tasks should be managed, the relevancy of information, appropriate frameworks for interpretation etc. However, we also know that these "positive cognitive conflicts" are often highly correlated with "negative relationship conflicts". As a consequence, an important goal of the knowledge management that we propose with Agorae in the DKN context is to maintain a healthy level of positive "cognitive conflict" while avoiding relationship conflicts. Thus experiments¹ with Agorae are conducted in the context of this DKN project simultaneously in France and Colombia and will progressively focus methods, concepts and techniques for managing "ontological disagreements" as a way of achieving this goal.

6. REFERENCES

- Cahier, J.-P. & Zacklad, M. (2004) Socio-Semantic Web applications: towards a methodology based on the Theory of the Communities of Action. COOP'04 WS on Knowledge Interaction and Knowledge Management. Hyères.
- Cahier, J.-P., Zaher, L'H., Leboeuf, J.-Ph., Pétard, X., Guittard., C. (2005) Experimentation of a socially constructed "Topic Map" by the OSS community. In *Proceedings of the IJCAI-05 workshop on Knowledge Management and Ontology Management (KMOM)*, Edimbourg.
- Barré, R., Meyer, J.-B., Hernandez, V., Vinck, D. Presentation of the IRD report on Scientific Diasporas, Report conducted at the request of the French Ministry of Foreign Affairs http://www.limsi.fr/Individu/turner/DKN/Completed_research/IRD-plaquette_EN.pdf
- Pierrat, M.-J. & Turner., W. A.(2004) From information to knowledge management: a new role for the information professional? In *19th Conference CODATA*, Berlin.
- Ribes, D. & Bowker, G. C. (2004) Ontologies and the Machinery of Difference: Towards a Sociology of Knowledge Representation. *Journal of the Association of Information Systems (JAIS)*, Special Edition on Ontologies.
- Shaw M. L. G. & Gaines B. R. (1989) Comparing conceptual structures: consensus, conflict, correspondence and contrast. In *Knowledge Acquisition*, 1, 341-363. (1989).
- Turner, W.A., Bowker, G., Gasser, L., Schmidt, K, Karasti, H., Zacklad, M. (organisers) (2004) *3rd International Conference and Workshop on Distributed Collective Practices*, Chicago, CSCW 2004, (proceedings to be published).

¹ In a first experiment, concerning the SEQXAM project team (a small project in the plant genomic field), the bootstrapping agenda organizes accurately the action of three successive roles: at t0, a first conflicting designer CD1 (non-expert) uses documents to build a provocative "candid bootstrap map";. At t0+10 days, CD1 stops. Then, in the same Agorae workspace facilitating the view of differences, a second conflicting designer CD2 (expert in the field, but non involved in the SEQXAM project) builds a second map ("expert bootstrap map"). Then, at t0+20, D2 stops his design to adopt a "facilitator" role and to help CD3 and CD4 (distant scientists deeply involved in the project) to begin their "synthesis map" (proposed to the group at t0+30) always in the same Agorae space This experiment is conducted from april to june 2006.