

Report - INSITE Workshop: *Networks' Emergence and sustainability*
Trying to contribute to the debate on *Envisioning a Socially Sustainable Future*

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The researches on networks are looking for how society organizes and makes evolve the relations between its members, units, groups and artifacts, changing the position of members, changing groups and updating central concepts and artifacts. A sustainable society should have the inherent capability to renew its structures and its artifacts' creations in an open way of diffusions of innovations and ideas, avoiding social, spatial, mental and temporal barriers, and closeness in small groups. The question of cohesion is of high importance in a context where everyone agrees to assume that diversity is the *sine qua non* condition for sustainability. These questions of social organizations are not new, but what is new is the ways empirical studies of today can address them.

At the scale of cities, these processes of social lock-in and lockout have been initially underlined in the 1920's to 1950's by the Chicago school of sociology and geography. They already consider the city's society as a life system, creating "Urban Ecology" studies. As a central point of their study, they evaluated the openness/closeness of different communities (even of gangs), their life cycles and developments, their interactions to each other and to their members. What is interesting in the vision of this Chicago school is that, the individual's integration inside the whole city always passed through its community (except for single workers). As a consequence, for Burgess (1925), daily mobility of people inside the city was de-structuring for society because of the lack of communitarian control (*The Growth of the City: an introduction to a research project*, in R. Park, E. Burgess et E. Mc Kenzie. *The City*, Chicago, University of Chicago Press).

Nowaday, people can belong to several communities in the same time, acting local and global in different social networks, and communities can no longer pretend to control their members (only in sects). Events and major societies evolutions must take into account different complementary aspects, developing at different scales, and sometimes apparently in contradiction. The network approach can transcend scales and communities and offer different views of these processes articulations.

What we tried to do in the workshop we organized is to show approaches helping to see things on different point of view (multiplying the solutions, or at least, the representation of the same phenomena), with multi-scale and multi-dimension possibilities of approaches.

For the multi-scale approach of complex systems, the issue for network analysis is to combine individual behavior with macro-structural evolutions. Following Schweitzer et al. (2009) « *the micro approach may have emphasized agent incentives in the development of informal links within firms and may have failed to successfully predict realistic dynamic outcomes. The macro approach better accounts for the large-scale system properties, but fails in linking these to the economic motivation of individual agents* » (Schweitzer et al., 2009, p.423). Simulations taking into account individual behaviors and macro-structures are in progress (Gautier et al.) and could help to underline how for past and present situations, a certain individual behaviors could lead to some macro-structures. Then changing individual

behaviors could lead to different macro-structures that are more or less robust against external or internal perturbations or cascading effects (Gao).

But as asked by David Lane, how can we imagine new behaviors or new values that we even never seen before? One of the ways could be to define not only “how individuals interact?” and “which relational networks they are forming?”, but at the same time, “how individuals interact according to the proximity of their interests?”, “what are the team formation dynamics?”, “about what they are interacting?” and “what are the values or systems of values and actions that are the issues of the creating networks?”. Melançon, Contractor, Cointet and Neal addressed these questions with different levels of methodological and conceptual approaches of the multi-modal networks.

They presented network tools apprehending at the same time the central actors but also the central concepts they share or debate and different actions that could follow or overlap these concepts. Centralities and closures are evaluated both for individuals, temporal groups formed by the share of ideas or/and direct exchanges (Hyper-edges), but also concepts, ideas and actions (by a semantic approach), media or tools (like in the Callon/Latour/Law conception of “*Actor-network theory*”). In doing so, Contractor considers that one can encompass the eco-system of a phenomenon, defining the meso-level (temporal groups or teams), between the micro-level (individual) and macro-level of main tendencies.

The new approaches developed on multi-scale and multi-modal perspective could underline the main factors and their levels allowing to a situation to appear or not. One of the central questions is how a collective movement appears? At which level and in which form a mass effect begins to be created around a concept or a new technology? How is created the level of amplitude of the retroaction on the eco-system?

The method is nowadays on progress on very diverse subjects like the map political blogs, controversies (Macospol project), performance of scientific teams, or development of spatial systems. I’ve chose an example in the geopolitical sphere that was not developed in our seminar, but in a three days seminar held last spring in USC (Los Angeles). The “Arab spring”, where the fights for democracy initiated the revolutions, has diffused in the Muslim countries (not all, but also not outside this culture). We can assume that at least two different processes have developed synchronously at two scales with two different temporalities:

- The first process is motivated by aspirations in all these countries for democracy and justice, without corruption and supporting the economic and social development of all the nations and religions of the countries. This movement is long run, but appears with different cycles of the legitimacy of governmental powers. The economic and political (repression level) situations of each country are also two main factors acting on the possible explosion of the revolution. The level of the national revolutions depended of the level of angry of the people (because to be ready to dead for a cause, one has nothing to loose).
- The second process is an international movement of Islam, begun even before the independence of the majority of all these countries (in the beginning of the 20th century), with sometimes the hope to build a large Muslim Empire against what we can call the Occident (movement in which, some personalities like Nasser has been

emblematic leaders, but they never found a real leader for this achievement like Saladin to unify the Arab countries). We can assume that the diffusion of the “Arab spring” from a country to another one, has been largely supported by the share of the same source of Islamic values and by the ongoing general resurgence of Islamic identity.

Of course, new technologies helped in the diffusion, by facilitating communication, but this diffusion would never have happened without these two levels of factors. The co-occurrence of the two movements leads these countries to find their own models of democracy, research that is strongly influenced nowadays by the opposition to occidental values and sometimes tending to the non-respect of the human rights especially for women. But many movements in Tunisia or Egypt continue to fight for human rights and gender equality.

The values that were shared and that continue to evolve are as much interesting as the people who develop them, and the movements (groups) they form, or the tools they used to communicate (knowing that media can be controlled or manipulated, interacting with ideas and concepts themselves (cf. Castells, 2009, “*communication power*”). Then, a multi-scale and a multi-modal approach would encompass these dimensions and their entanglements.

In many other situations, multi-modal and multi-scale network approaches can identify most of the main factors and central concepts that are leading social movements. Producing simulations, will not pretend to predict the future, but could make better understand the multidimensional situations when things can change radically, or increase the knowledge on the formation of groups of opinions, the ideas and concepts taking value and their multi-scale effects on the world development. Taking the least categories and groups *a priori*, but using tools to underline centralities, closures and levels of interaction could help to detect the “new” values and the groups sharing them (their characteristics and their actions) in our “old” glasses.

In some ways, also, this tool could help to find multiply views to one single question, offering a support for “divergent thinking” (RSA) leading to more ideas to find new ways for social developments facing environmental or internal issues. With the support of this kind of tools, one could find some ways to develop some new generations of pedagogic games, where the goal would not be to gain, but to find a win-win solution, not to fight but to find some ways to make peace.