

COGNITIVE MAPPING AS SOCIAL PEDAGOGY

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Abstract: The article explores the value of cognitive maps for thinking social and cultural complexity, for space production and dynamics and for creating capabilities of human development. Taking in consideration that the scientific approach can produce an accurate portrait of a limited field but cannot represent or imagine "the whole picture", the change of scales and the quantitative transpositions of things in a grid can facilitate "grasping, assessing and apprehending them at a glance". According to Deleuze and Guattari, "the map can be conceived as a work of art, as a political action or as a mediation". New visual vocabularies, which can display 'n' different monitoring points to run a "traceroute" programme by an autonomous system, are useful in many ways - to analyse significant paths of packet streams, to "read" power maps - "constitutive diagrams" and "cartography of dissemination"- or to track movements of diverse migration flows, imprint contemporary symbolic relations (social roles, gender, class, hierarchies), and renew the capacity for political intervention in the postmodern world.

Keywords: *virtual space, network maps, cartography of dissemination, social pedagogy, network ontology*

Motto: "Never believe that smooth space will suffice to save us".
 (Gilles Deleuze, Félix Guattari, *A Thousand Plateaus*, 1987)

Space, network maps and performative knowledge

The topicality and relevance of Fredric Jameson's project of cognitive mapping, developed in *Post Modernism or the Cultural Logic of Capitalism* (1984), is reflected in the long term collaboration of the critique Brian Holmes with the art group Bureau d'Etudes in Paris. According to the information posted on their website¹ the group creates maps that reveal "links between think tanks, financial firms, regulatory bodies, intelligence agencies, media groups, networks of consumer distribution, weapon makers, and satellite companies". On the other hand, they assume to also depict "anarchist positions, dissident knowledge producers, squats, and charts that relate to various forms of "non-capitalist exchange". In their professional practice "knowledge becomes inherently political and the question of access to knowledge becomes of prime importance". Accordingly,

"..if space is performative, it has a history, and if knowledge is performative it is spatial". (Turnbull, 2002: 137)

Conversely, a "cartography of attachments" (to space as a "space of places", a container of history, communities, cultures, systems, institutions, etc.) would see *maps as inscriptions on space, as extensions and stratifications of space* (Tuters, 2005). In performing and imagining different spatial settings, 'it allows far more differences to be explained than when a single meta-narrative is applied after studying just one of them' (Martin, 2005: 299). Instead of being materialized into a site of power or a site of events, the political / performative approach of knowledge imprinting a "cartography of attachments" may host a meta/narrative level being currently translated into new media cartographies that multiply

¹ <http://www.spatialagency.net/database/why/political/bureau-d-etudes>

interfaces for accessing/ tracing/ upgrading performativity. To perform “spatialisation” they need “*matrices for accessing spatial semantic and diverse intensities looking for expression*” (Rolnik, 2005, Latour, 2006). An interactive map posted on his blog by the designer Xiaoji-Chen, and presented below (Fig.1) reveals distinct regional patterns of telephone conversations depending on the geographic distribution and the variable frequency of calls, figured with different colours and intensities. According to Xiaoji-Chen, “The Connected States of America” is an “interactive map where the user can click on a county to see its connectivity with all others in the country”².

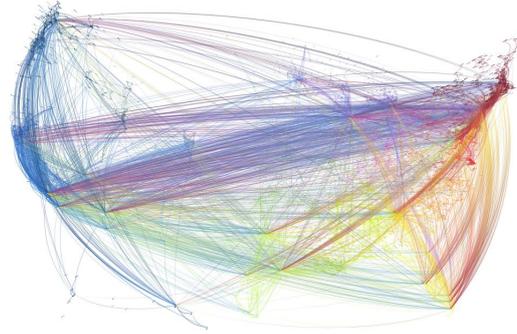


Fig.1 “A Visualization of Version Histories” by Xiaoji-Chen,
[//xiaoji-chen.com/blog/tag/data-visualization/](http://xiaoji-chen.com/blog/tag/data-visualization/)
 posted on 07/07/20122

Screen shot courtesy of Hiaoji’s Design Blog:

One of the questions is if digital mapping can be considered a method to empower individuals and communities to find their own movement/locatedness in both spaces (of flows, and of places, Castells, 1999, 2004,2012) or rather an instrumentality of special interest for the global economy, international relations or (trans)national governance. Second, if a strategic grid digitally generated using all facilities of communication that a soft, network, data base or archive may afford, thus all the conditions of performativity being created, the map as visual format will meet specific requirements at the level of microperception and micropolitics of the Internet i.e. of a cartography that affects/ intersects and reinforces the public understanding of space in each of two forms conceptualized by Castells, both in terms of architecture and dissemination of knowledge through cooperation /mobilisation, social learning, debate and (inter)action. From a methodological point of view, “unveiling” hidden spatial relations and their dynamics through digital mapping using diverse applications and facilities, is of critical importance to overcome or correct thresholds and limits of human perception for which the map may be either a frame, an instrumental knowledge, or a work of art. Mapping is thus a synonym of scanning/ extending /augmenting as cognitive operations, opening new fields and spatial dimensions, unlocking critical thinking from personal experience to theory, passing through multiplicity, simultaneity, interrelatedness and flows.

Moreover, if the realization of a grid applies to the technique of a grid an instrumental logic “out of lived space” and a symbol of “rational” domination, for a cartography of places

² See also Xiaoji Chen’s dynamic maps in *Seeing Differently: Cartography for Subjective Maps based on Dynamic Urban Data. Thesis in Design and Computing*
http://descomp.scripts.mit.edu/www/_main_dir_link/images_projects/takehiko_01/xiaoji_map/xiaoji_map.html

and attachments the grid is an architectural convention, a negotiation, an agreement (Kitller, 2012). Therefore, we will approach maps as applied (instrumental) thinking of space aiming to monitor or to identify context changes or spatialized power/structures of authority/norms; the maps are signifiers, they support the social representation that needs to be approached in terms of objectivity, intelligibility, correctness and not least, in terms of *a priori* knowledge, geopolitics, ideologies and injustice. Rolnik notes that "the complexity of this projection brings the realization that rather than fighting an illusionary "imperial grid", new media cartographies need to rapidly multiply interfaces for accessing and tracing performativity, they need matrices for accessing spatial semantics (Rolnik, 2005). According to Holmes, the Internet is the "vector of a new geography", whose influences exceed virtual space and virtual realities, shape "our lives in society", and shift "our perceptions along with the ground beneath our feet". Thus, the development of new instrumentalities in communication science, political science and education is needed in order to balance "the incapacity of our minds, to map the great global multinational and decentred communicational network in which we find ourselves caught as individual subjects". Accordingly, the maps elaborated by the Bureau d'Etude art group can therefore be seen as "tools of spatial agency" with special interest to promoting an understanding of the highly complex workings of advanced capitalism, a necessary step towards imagining a counter-position and effective resistance.

- How relevant are the network maps and aesthetic cartography for a social pedagogy of the public understanding of space ?
- How relevant is the latter for the "public sphere of the network" or the new (transnational) and (trans)public sphere(s) ?
- How do energy (diagrams) "work" ?

Critical theory in terms of spatial knowledge

The early 90s, Jameson coined the term cognitive mapping to argue the necessity to renew the thinking and figuring the spatial dynamics of the global capitalism on the basis of a critique of spatial relations of power. Epistemological shifts, pushed forward by the use of sophisticated technical instruments, would need to be paralleled by the deployment of radically new visual vocabularies, in order to produce a clearer understanding of contemporary symbolic relations (social roles, class divides, hierarchies) and a fresh capacity for political intervention in the postmodern world. Jameson stated that only by inventing "some as yet unimaginable new mode of representing" could we "again begin to grasp our positioning as individual and collective subjects and regain a capacity to act and struggle which is at present neutralized by our spatial as well as our social confusion." In "Cognitive Mapping", a text resulted from a discussion at Illinois University in 1990, Jameson pointed the need for "an aesthetics of cognitive mapping" to resolve "the incapacity of our minds, at least at present, to map the great global multinational and decentered communicational network in which we find ourselves caught as individual subjects." He conceived this cartographic aesthetics as a collective pedagogy, whose challenge would be to correlate the abstract knowledge of global realities with the imaginary figures that orient our daily experience. Having such a challenging purpose he developed a complex rationale to advocate

a connection between an epistemocritique³ and an aesthetics of space as an appropriate methodology for mapping the transformations that occurs.

I have tried to describe the first kind of space of classical or market capitalism in terms of a logic of the grid, *a reorganization of some older sacred and heterogeneous space into geometrical and Cartesian homogeneity*(our italics), a *space of infinite equivalence and extension* of which you can find a kind of dramatic or emblematic shorthand representation in Foucault's book on prisons. The emergence of this kind of space *will* probably not involve so acute problems of figuration as those we will confront in the later stages *of* capitalism, since here, for the moment, we witness that the long familiar process generally associated with the Enlightenment”, and among them..... “the standardization of both subject and object, the denaturalization of desire and its ultimate displacement by commodification or, in other words, success, and so on” (Jameson, 1990:2).

It results that the cartographic aesthetic responds to an urgent need of individuals to regain control over space (of flows) and to counterbalance its power through mapping. At a distance of several decades, Holmes maintains the argumentation line advocating “a pedagogical political culture” - which seeks to endow the individual subject with some new heightened sense of its place in the global system, which will necessarily have to respect this now enormously representational dialectics of the postmodern condition and invent radically new forms in order to do it justice... The political form of postmodernism if here ever is any will have as its vocation *the invention and projection of a global cognitive mapping on a social as well as a spatial scale* (Holmes,2010).

A recent analysis by Robert Tally maps the common points between Jameson and Foucault's theories of space and spatiality and asserts a ‘cartographical imperative’ for two aspects of major importance: 1) “once space and spatial relations can be understood as inherently significant aspects of our being-in-the-world, *not just in an abstract sense but also as a visceral sensation felt in our everyday activities* (our italics), then it becomes clear that a “cartographical imperative” animates our actions and interactions in the *Lebenswelt*”. 2) the increased *reassertion of spatiality into the methods and practices we use to make sense of the world in which we live* has made clear that *mapping is now a crucial element* of nearly all of our studies (Tally, 2013).

It results that the cartographical imperative is in line with the Marxist analysis of space but keeps *a human/social stance on cognition*, the criticism being oriented to enhance its reliability and substance. An aesthetic cartography has to relate the symbolic side of maps and the theoretical sensitivity to the change of scales and the transformations of socio-political patterns, including the politics of representation and instrumentalities that make-sense of global space and spatialisation (of technology, finance, economy, migration, the flexible accumulation of capitals, etc.). Harvey refers also to a “compression of time and space” and its consequences including “the collapse of value systems” embedding the social

I use the word 'compression' because a strong case can be made that the history of capitalism has been characterized by *speed-up in the pace of life*, while so *overcoming*

³ Tally, jr."This Space that Gnaws and Claws at Us. Foucault, Cartographics, and Geocriticism" *Épistémocritique* , Volume IX - Automne 2011.

spatial barriers that the world sometimes seems to collapse inwards upon us (240). The central value system . . . is dematerialized and shifting, time horizons are collapsing, and it is hard to tell exactly what space we are in when it comes to assessing causes and effects, meanings or values (298).

Another significant rapprochement between Jameson's ideas and Harvey's radical geographical analysis of capitalism, consists mainly in a "critical engagement" with space, a methodological attitude that opposes the positivist approach in geography, the inequities and injustice which affect *de facto* spaces and societies, a position defended in a series of influential books beginning with "Social Justice and The City"(1973) to "Justice, Nature and the Geography of Difference" (1996), including "The condition of Postmodernity" (1989)⁴.

Cognitive mapping as a knowledge factor

In "The Forms of Capital" (1986) Bourdieu underlines the importance of two forms of capital-social and cultural capital- that at the time were not included in the economic theories of the accumulation of capital. He warns that the decentering processes in the late capitalism are produced by the very systems designed to (mechanically) adjust imbalances missing the cultural aggregator whose lack of understanding in the economic theory have contributed to lingering structural differences and fracture ⁵.

The social world is accumulated history, and if it *is not to be reduced to a discontinuous series of instantaneous mechanical equilibria between agents*(our italics) who are *treated as interchangeable particles*, one must reintroduce into it the notion of capital and with it, *accumulation and all its effects* (Bourdieu, 1986).

The attempt to apply this concern to digital media analysis leads Matei to a valuable development of the theory of social capital. He coins the concept of "practice capital" by extending the concept of social capital that diverse authors (Uslaner, Putnam, others) have conceptualized in relation to trust as a „secret ingredient" of both institutional functioning and social action (Matei, 2014). He focuses the analysis on a cultural factor -the debate- that makes the network energy to work/emerge as a metalevel, an array of dynamic interchanges which stimulates both the capitalization of digital resources in databases and archives and materializes these connections and exchanges into collaborative projects. In a recent study he explores the research significance of the C-Span Video Archive ⁶ building a distinct perspective on debate as "a hortatory social practice" that develops a making-sense creative energy, forges new spaces (of discussions), "constituting" (a term with complex connotations in the theory structuration) the meta-level of the network -"collecting" also data journalism and public affairs into a node of interactions, similar to web of life. He also proposes a

⁴ The same position was adopted by several geographers and anthropologists, some of Harvey's former students now in high academic positions in USA and European countries, Neil Smith, Richard Walker, Erik Swzngedouw, Michael Johns, Maarten Hajer, Patrick Bond, Melissa Wright, and Greg Ruiters.

⁵ "Migrants in Europe A Statistical Portrait of Migrants from the first and second generation", Theme: Population and social conditions, EUROSTAT, European Union, 2011.

⁶ Matei, S. A. (forthcoming). A social network analysis "practice capital" approach to enhance the C-Span Archive with meta-communication data to support public affairs debates and data journalism In R. X. Browning (Ed.), *The C-SPAN Archives: An interdisciplinary resource for discovery, learning, and engagement*. West Lafayette, IN: Purdue University Press. (anticipated publication date: 2014)

method to measure the „accumulation ”of practice capital that registers the spatialisation of influence of active users through „discovering, learning and engagement”. (Matei, 2014).

To capture practice capital all that is said is connected to all that was said by other speakers by measuring the distance in time between what was said and by moderating the link by the amount of what was said, using a gravitational pull formula: $M*m/d^2$. Once the ties are established, you can measure *the degree of centrality for each team member*, which becomes his or her level of practice capital. *More central members have the greatest influence on the practice*(our italics). (Matei, 2014).

To a certain extent the practice capital refers to the theory of Sola Price of *cores* (nuclei) of preferential connections related to *preferential attachment processes*(Sola Price, 1976) but as explained by Matei, it takes into account a form of agency which enhances the participation of members in debates, as an interaction architecture that integrates digital support.

Instead of conclusion we will keep Bourdieu’s theoretical framework of the accumulation of capital on the one hand and the digital focus on the other. Hence we can reformulate and recontextualize the social capital issue and its transformation in the (hybrid) field of the network theory.

1. the capital is “accumulated labor” (the question is *who or what* really “works” if the application runs) in its materialized (and dematerialized) form or its ‘incorporated,’ embodied form)”. Thus, changing or/and maintaining the framework of interpretation and taking into account the emerging changes that redesign and modify the character, organisation and nature of work,
2. a digital archive/data base might be considered as a “dematerialized mode of capitalisation” and can host even more than a double articulation either “appropriated on a private, i.e., exclusive, basis” or on socially/publicly shared one.
3. The interaction between technical(algorithmic) functionings and performativity with personal and agents or groups of agents enables them” to appropriate social energy in the form of reified”(non-human) or “living labor” (social practice in terms of debates on forums, “modes of talk / modes of action” as defined by Massumi) (2010).
4. In the language of Latour, an archive or a data base might be/is a “non-human actor ” which “cooperates” with other non/human actors *and* with human ones (designers, users and others more or less visible) in the construction of a sense - a representation connected to signifiers (of reality, as well as real/located spaces), which are not the reality itself but cognitive maps/grid of the real or projected space. Thus,
5. to map hybrid relations of digital networks “must not be seen as referential” - Massey’s warns that a map is not the real space but a drawing, a picture – Thus, it can be defined as
6. an instrument to sign up ‘the interface between two forms of circulation’ (Latour and Hermant, 2006). The authors accept that they simplify things “but it allows augmenting and performing spatialities we could not imagine before”. Compared to this instrumental neutral approach in terms of “interface of circulation”(that equates “performance” in “circulation”),
7. the concept of practice capital maintains at least a possibility to see different spatial patterns resulting from the upgrading the dialogue of minds with cognitive tools

(embedded applications) in creating new (hybrid) spaces/worlds as well as to frame or treat them critically. In this case

8. the term “cooperation” makes sense even in a controversial way of a very serious statement of the Actor/Network Theory (Latour, 2005), being acceptable for IT engineers and architects⁷ to define new forms of agency and interaction architectures, but far from the common sense understanding anchored within the anthropological mode of thinking.

The gap between experts and nonexperts is more visible when experts who possess a recognized defining capacity refer to nonexperts in terms of “targets”, “population”, “ordinary citizens”, while ordinary citizens are expected to assume the role of stakeholders of public policies, a role requiring appropriate abilities to assess, assume or cooperate in sustainable development projects or E-governance. These contradictory definitions have to be considered in connection to the dynamics of transformations between social and cultural capital and diverse forms of agency, including “multiple humans interacting with multiple automated control agents”. According to Bourdieu, “...the structure of the distribution of the different types and subtypes of capital at a given moment in time represents the immanent structure of the social world, i.e., the set of constraints, inscribed in the very reality of that world, which govern its functioning in a durable way, determining the chances of success for practices...”. He concludes that it is in fact impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms and not solely in the one form recognized by economic theory”.

But a significant and positive aspect of the theory of practice capital is the “restoration of the modern sense of becoming” based on the development of digital resources that nuances the stance of discontinuity promoted by Paul Drucker in “The Age of the Discontinuity”, (1969). In a knowledge society even a subject of multiple measurements and control like the human capital is a key factor that improves the quality of an archive and out of which new spaces and interfaces emerge. A phenomenology seems to animate the digital space, which is, in many aspects distinct from the network entelechy (pure emergentism) as defined by Callon, Latour Law in science anthropology. On the other hand, a relevant relation between online/offline makes archives more complex, interdisciplinary spaces as opposed to “by design” versions of sociability and stereotyped profiles of users - players. Thus ‘practice capital’ might be assessed both as a resource a quality or a *poietic* energy beyond pure rhetorics or digital architecture. It is of major importance that the reflection on public understanding continues through practical learning, which is embedded in all sorts of images, promises, discourses more or less conflictive - and of an instrument that can easily convert multiplicity into reasonable, clear and effectively perceptive overviews of spatiality.

⁷ See also D. Schreckenghost et al, *Supporting Group Interaction among Humans and Autonomous Agents* the authors’s aim is “to give background on human interaction with space-based” through „an architecture that supports multiple humans interacting with multiple automated control agents”.

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