Anticipation and territory. Does collecting information need citizens?

Philippe Herbaux

TOOLS OF TERRITORIAL INTELLIGENCE
AND GENERIC SCIENTIFIC METHODS

International Annual Conference on Territorial Intelligence
BESANÇON 2008 (16-17 October)

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Philippe Herbaux,
Doctor in Information and Communication Science
Delegated to Territorial Intelligence
+ 33 03 20 62 15 59 philippe.herbaux@univ-lille2.fr
Laboratory I3M Toulon Nice
Université Lille2★1, rue du Pr. Laguesse★ F-59000 Lille

In 2002, the author led the regional plan of territorial intelligence Nord-Pas de Calais in France. In a book published in 2006 "Intelligence Territorial Markers Theoretical", he demonstrated the parenthood of economic intelligence in a global system of territorial intelligence. Member of laboratory I3M Nice Toulon, he recently took part in a scientific committee convened by the Brussels Capital Region, a work plan about territorial intelligence.

TITLE: ANTICIPATION AND TERRITORY
DOES COLLECTING INFORMATION NEED CITIZENS ?

Abstract: Anticipating unbalances and threats within a territory most often lies in an ensemble of indicators. A sometimes basic system of information provides the decision-makers with warnings. Yet, a number of risks, either rapid deflagration ones or from quite scattered origins, cannot rely on a symptomatic treatment only but requests collecting from multiple sources beforehand and aiming at a semiological treatment of information evolution. Part of our study on territorial intelligence leads us to think that the processes of anticipation of outbreaks within the territory will tend to be based on collecting methodologies encompassing the participation of 'ordinary individual'. Two observations on air surveillance on the one hand and on biodiversity seasonal evolutions in France on the other show these new enterprises and collective methods of mutualisation of information within the territory in an actors-oriented paradigm.

Keywords: mutualisation, semiology, sustainable development, anticipation.

TITRE : ANTICIPATION ET TERRITOIRE
LE RECUEIL D'INFORMATION A-T-IL BESOIN DU CITOYEN ?

Résumé : L'anticipation des déséquilibres et menaces au sein du territoire est fondée le plus souvent sur un ensemble d'indicateurs. Un système d'information parfois rudimentaire transmet alors les alertes aux décideurs. Or, nombre de risques à déflagration rapide ou d'origine très dispersée ne peuvent s'appuyer uniquement sur un traitement symptomatique mais requiert un recueil multiple d'amont orienté sur un traitement sémiologique des évolutions de l'information. Un volet de nos travaux sur l'intelligence territoriale nous fait constater que les processus d'anticipation des ruptures au sein du territoire s'appuieront de plus en plus sur des méthodologies de recueil incluant la participation du « chacun ordinaire ». Deux observations sur la surveillance de l'air d'une part et sur les évolutions saisonnières de la biodiversité en France d'autre part exposent dans un paradigme orienté processus, ces nouvelles démarches et méthodes collectives de mutualisation de l'information au sein du territoire.

Mots clés : mutualisation, sémiologie, développement durable, anticipation.

1.   Introduction

If, according to Gaston Berger, prospective is '*an analysis tool of potential futures*', its complex use is left to the discretion of scientists.

If territory needs to enlighten its 'possbilities', it also benefits from preserving its patrimonial, economic or non-material capital. The convergence principle does not spare competition from Nation-States which cannot translate into Regions nowadays and, eventually, within soil zones – industrial, touristic routes, theme parks etc. Thus, information and its treatment are at the centre of anticipation forces for risks and outbreaks in a collective posture termed 'territorial intelligence'. From Latin *inter* (between) and *ligere* (link with), the word 'intelligence' does not deny its Indo-European etymological root, *leg* (gather together) which de facto provides us with its meaning. Applied locally, it thus encourages the demand the link has for creating or developping within territorial information mechanisms.

For the past few years, in information transmission processes and in order to get rid of the frame of the user-oriented paradigm (Polity 2000), it has become important that the very nature of information is not seen like a data – 'what is given' – only, which the user spots in a document or a corpus. Information can also be apprehended like an interpretation process; it then turns into an individual construction within cognitive appropriation, which, in the case of territorial intelligence, gradually shifts into collective construction. Isn't it a translation of another paradigm? actor-oriented paradigm like?

In such a case, how is the process to be analysed?

For each individual in the group, one may undertake to understand the nature of the transformation of those signs or of spotted clues and mechanisms which can turn it into a conjecture. The latter, subjected to appropriation and validation by the community, would constitute the pillars of a collective construction.

Another plausible hypothesis is that information mutualisation activity achieved with the project's partners, takes informational mechanisms into account. In this type of paradigm and in order to act, the social actor needs to interact with the group, backed by the use of information systems to that end.

Nevertheless, both hypotheses constitute the two focals of a same landscape. That of understanding individual mechanisms of translating information to forces of the mediological sort participating in their transmissions.

We offer to comfront these propositions with the contents of an explorative work led during the first half of 2008, within two local associations with a national audience. These actions combine the tools for scientific research with collecting data realised by the 'ordinary individual'[1].

The first one looks at air surveillance in the regions of France and more particularly inside controversial zones within those regions. On top of the existing technological process, it makes sure a number of inhabitants – called 'noses' – participate in the process of collecting and identifying unpleasant smells within a definite environment.

The second one is about all volunteers – identified on a national collaborative platform – observing plants, trees, birds and insects phenology. To study phenology means to study seasonal rhythms of plant or animal life according to the weather. The results of the collection of such data participate in a large survey on climatic changes led by various groups – Tela botanica [2], Crea [3] - and the CNRS and INRA's participation.

2.   methodology

2.1.   presentation

This work was realised between the second quarter of 2007 and the end of the first half of 2008. Collecting those data required the involvement of individuals and it also benefited from complimentary inputs on websites, blogs and fora dealing with this issue. Two observations made locally spotted the founding elements of those actions and accompanying means. A set of measures taken by the participating members, their geographical origins and their selected favourite topics was enforced. Two interviews with semi-directive dialogues took place with pilots for such actions, on the basis of an interview guide elaborated on the object of the research. A phone survey using the method of questionnaire was also led on nine participants chosen at random.

3.   theorETiCAL AND methodologiCAL ASPECTs

3.1.   epistemological tie

They are set into a rather classical triangulation 'space – actors – time' in an evolution perspective of user-oriented paradigm towards a territorial actor-oriented paradigm.

Through his notion of 'public space', Habermas provides the first term; not in his 1962 postulate, now drained to its foundations [4], but in an updated declention of this 'public pace' starring the virtual and new implicit

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[1] The phrase 'ordinary individual' means any individual randomly chosen from within a population.
[2] A network of Francophone botanists grouped together within the Tela Botanica organisation. www.tela-botanica.org
[3] Centre de recherche sur les écosystèmes d'altitude (Centre for Research on altitude ecosystems, non-profit organisation) http://www.crea.hautesavoie.net
[4] i.e. in the 'tidal bore place' of bourgeois expression meeting civil society expression

cooperations. Wolton (1996) had given a new perspective backing up his articulation with political space and Charaudeau (2005) had specified its discursive evolutions noticed in its new uses.

In his proposal for dynamic representations, Lévy (1997) presents a second pressure point by means of his collective intelligence protoparadigm now noticed by Noubel (2007) in the migration *of collective intelligences towards one collective intelligence*. That is to say the conjunction of knowledge distributed within multiple collectivities and in that environment, the ordering of new technopolitical steps for training, apprenticeship, assessment of knowledge and skills. These proposals are to be coupled with the practice of the grouped putting into speech process as described by Wenger (2002), viz. knowing the actors' capacity to mutualise and capitalise their knowledge.

3.2. methodology

Presentation

This study was realised between the second quarter of 2007 and the end of the first half of 2008. The data collection benefited from individual interviews as well as from further input that websites, blogs and fora linked with these topics constitute. Two observations managed to single out the founding elements for these actions and the means accompanying them. A set of measures related to the audience involved, of their geographical origin and the chosen favourite themes was implemented. Two interviews with semi directive dialogues were led with these actions pilots on the basis of an interview guide woven on the object of the research. A phone survey using the questionnaire method was realised on nine participants randomly selected.

4. FROM sign TO decision

4.1. Signs and time-space

Signs get particular attention from De Saussure (1922) in the field of linguistics, particularly in societal situations and he says: '*semiology studies the life of signs within social life*'. Barthes had illustrated a few dimensions of the sign that constitutes information. As soon as he returned from Japan, his work, *L'empire des signes* (*Empire of Signs*, 1970), was about to give a new impulse to semiology and fertilise the previously ploughed fields of research anew.

The sign is only a sign as long as there is an agent, i.e. someone interpreting it and considered an information-bearer, De Saussure says. Signs are sometimes mistaken for the signified according to the structural translation which can be made in linguistics; as it happens, in that field, it constitutes one of the main contributions Peirce's pragmatic semiotics. Most often, the interpretation of signs is personal and varied, except when it is the attribute of a shared culture (religious, masonic, technical, philosophical signs etc.). As an example and in a more prosaic manner, the symbols expressing the recommendations of the highway code are the signs of a culture shared by drivers and road users.

Here, the signifying sign and the matching decision kin are a prerequisite for entry in that community (the highway code examination).

If information is necessary to the decision peculiar to anticipation, one may wonder if the decision-maker must satisfy him-/herself waiting for validated, formalised and public information in order to make his/her decision; in such a case, it will provide him/her with precise information but in a fashion dramatically too late. Therefore, action at 'news', and even sign, level is necessary in order to hope to participate in the elaboration of that information. Time and the construction of information are correlated. If information formally manifests itself, the price to pay is tragic time for maturation for the judicious decision most of the time (see Graf. 1).
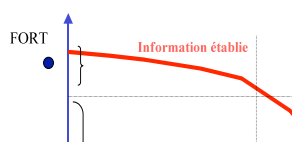

DU SIGNE à l'INFORMATION

FORT

Information établie

Fig 2 : Genèse de l'information

Graf. 1: construction of information

Making signs stand out is a constant glance on the insignificant, but what is the insignificant? Insignificant: *that which does not mean anything* says the dictionary (source: Robert 2001). Senses are not resorted to by any signifier. Yet, the object, be it sign or symbol, may acquire meaning; it then becomes the indication of an individual representation. *The insignificant has relative value in regards to the individual charge it is given*, says Barthes. In terms of perceived risk, the uninformed inhabitant of the territory turns into a passive observer of the

insignificant. A territorial intelligence system can thus make the actor of the local evolve from a function of receptacle to that of recipient. Thus, the interpretation of a sign's possibilities starts as closely as possible to reception. Given the importance of the population concerned, visual angles and individual experiences a reduced sign treatment exists such as shared resolution programmes confided to thousands of inviduals computers throughout the world can be. The territory endows itself with a mechanism of sustainable anticipation thanks to a continuous mutualisation system of the insignificant as information between inhabitants. This is an evolution of the culture of organisations.

4.2. From the technocratic concept to the collaborative concept

In its administrative dimension, the territory is most often subjected to a political decision forced to proposed orientations by numerous partners (elected representatives, communities, social agents, media or even groups with various interests). Conjecture – and therefore opinion – construction modalities yet rely on a collection of multiple data from which a few main pressure points can be spotted:
- territorial databases
- statstic treatement
- GIS (geographic information system)
- media production
- computerised management system
- Etc.

All of that information abound or refute hypotheses which provide with one or more conjectures necessary for the decision (see fig. 1).
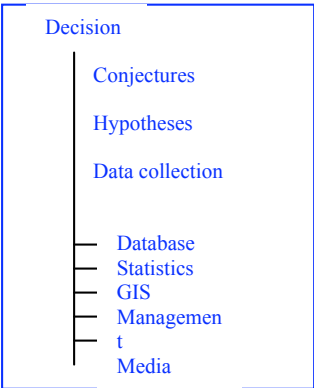

Fig 1: Emergence of the territorial decision

Most of the time, the latter then establishes itself on the priority conjecture affected by surrounding constraints pressures caused by personalities pressure groups. Can it be said that the decision then made is the best answer to conservation, if not extension, of territorial heritage? Authorisations to build in areas subjected to floods, which used to be given by some elected officials, show the opposite.

If the technocratic construction of conjectures is being subjected to further input made up of a continuous collection of signs and indicators, we introduce a crossing made up of the individual input of the 'ordinary individual''s observations. Thus, the hypothesis is shaped by the conjunction of participation between formal information and signs, between established data and indicators (see fig. 2), thus establishing a sort of diachronic 'grammar' of the upcoming event.

This cross-over characteristic may constitute further interference, i.e. a piling up of each piece of information but turns into the consultant of all the data offered by the afore-mentioned pressure points being put into perspective.
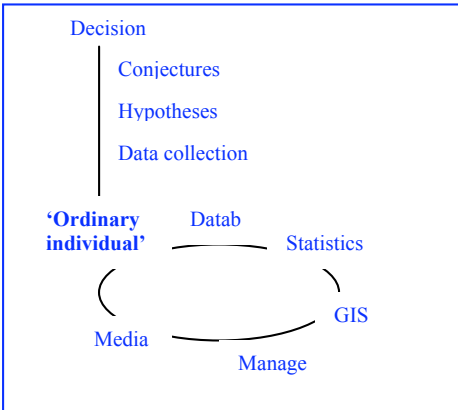
Fig 2: Collaborative emergence of the territorial decision

Our statement is illustrated by reporting about two budding achievements attaching itself to develop the notion of anticipation and proactivity, resorting to the 'ordinary individual'. Both these devices have authority to association and to national audience and they combine tools for scientific research with a vast data collection realised by what I would term the 'ordinary individual'.

The former looks at air surveillance and its unpleasant drifis by a group of local volunteers. The second device, a partner of GIEC (Intergovernmental Group on Climate Evolution) is of interest for the observation by all citizens, thanks to a national collaborative platform for plant, tree, bird and insect phenology [5].

5. observations

5.1. Atmo Picardie

In France, Atmo Picardie is a structure in charge of the surveillance of air quality for the Picardie region, encompassing the *départements* (or counties) of Somme (Amiens), Aisne (Chauny, St Quentin) and Oise (Creil). This structure gives out an indicator of air quality for the towns concerned. Three codes of coulours, ranging from green, for a satisfying air quality, to orange, for mediocre air quality, and red for a bad air quality, present a indicating scale from 1 to 10 broadcasted daily to the public. Apart from ozone, hydrogen dioxide concentration and polluting particles concentration (< 10 micrometres) are particularly sought. The drift in the rates leads the *Préfet* (or chief of police) to take conservatory measures upon still or mobile sources (reducing traffic, actions upon emission origins, public information etc.).

To this day, despite many existing captors, there is no measuring device capable of following certain smelly molecules in the environment, considered unpleasant by residents of the emission zones (e.g. industrial zones). Please notice that the notion of toxic risk is limited since polluting and dangerous products forbidden by law are already spotted by electronic captors; nevertheless, the permanence of undesirable smells may be considered a threat to indivudal well-being.

Following Atmo Picardie's initiative, a network of volunteer captor citizens, whom journalists nicknamed 'northern noses', set itself up as an olfactive watchdog system. According to our data collection, the presence of a few company officials among the fifty or so registered volunteers is evidence of the interest they feel as citizens and their care to act in an anticipative wasy within their framework.

During the last quarter of 2007 and the first of 2008, a biweekly training aimed at learning and spotting fifty or so isolated smells and their multiple combinations. The typology of this 'field of odours'® is established in a way specific to the environment in order to watch and to potential pollution sources. It is implemented under a referent laboratory control [6]. Thus, five poles of odours have been defined in a virtual space limited by five families of molecules (amines[7], pinene, citral[8], pyrazine and DMDS [9]) As soon as they start training, each volunteer takes daily data collection in specific field of odours within n urban or suburban zone. This does not prevent from occasionally multiply notes in moves outside the collection zones. The results expected through that watch by 'the ordinary individual' should allow to establish a cartography of polluting emissions and their evolution over time, thanks to a GIS [10]. The transmission of information usually happens under several modes: meetings, text messages, fax and phone. An interactive platform, accessible on the net and over the phone (voice mail) is currently being studied. In this example, the 'data collection' phase only is sollicited. Information being put into perspective depends on the institution which has the last say on a return to volunteers' conclusions. Access to maps and pollution evolutions make up a sort of virtual appointment of individual investment, according to some participants. Nevertheless, it can be observed that so far this device limits the notion of coaction (collection, mutualisation, treatment, transmission). Involve citizens in data interpretation constitutes a second step according to the action pilot. Yet, the difficulty of the device seems to lie in the durability of the volunteers' action. The construction of a mutualised management of knowledge seems slowed down by the 'turn over' noticed by participants (30 % over 6 months); the main reasons evoked for these abandonments are the lack of availability related to the training follow-up mainly [11]; the difficulty of the training is put forward as the second reason. Moreover, that community of practices usually dislikes being subjected into a system of formal functioning, excessively organised in favour of a liberty process otherwise of lesser constraint. The observation of the construction communities of knowledge by Wenger had headed towards a dynamic process of the group,

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[5] The study of phenology is the study seasonal rhythms in the life of a plant or an animal according to climate.
[6] IAP SENTIC research department in Evreux, specialised in olfactive expertise (environment, food industry, perfumery etc.)
[7] among which the rotten egg odour hydrogen sulfide
[8] among which limonen with a citrus smell (citral and pinene family)
[9] Dimethyl sulphide with a carrion smell (fertiliser).
[10] GIS: geographic information system which can be seen by cartography most of the time multilayered.
[11] Each participant lives less than 10 minutes away from the training centre; this constitutes one of the selection criteria for selecting volunteers.

those 'hesitations' he considers necessary and constitute compulsory evolutions of that construction to him. Among others, he reduced these steps down to seven progressive phases (Wenger, 2002).

We think that fitting this experiment into a quadrennial programme would allow to progressively set up the ' hard core' of volunteers and to establish a regional network fully using the resources of a TIS (territorial information system). Reactive, proactive and anticipative logics then could fully express themselves according to the following triptych (fig 3) :
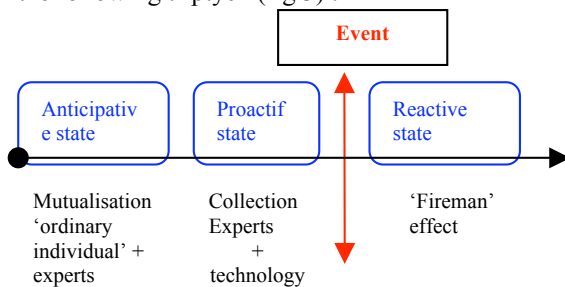
Fig 3: Action states facing rupture

5.3. Seasonal observatory

The field of environment is not left out. The CNRS (National Centre for Scientific Research), the INRA (National Institute for Agronomical Research) and a few associative structures implemented the ODS [12] (Seasonal Observatory). This operation occurs throughout the year and offers anyone in France to take part in a scientific research programme. These works are based on the alarm climatologists pulled about ten years ago concerning climate change on global scale. The analyses produced contribute to feed the IPCC (intergovernmental panel on climate change) [13]. Each volunteer's contribution may be slightly time-consuming and forces him/her to a regular and precise committment. By joining the electronic platform, the citizen commits to observe and report on-line all of these observations of the evolution of wildlife and flora over the seasons.

The method is ancient; as early as the mid-19th century, a sort of phenological observation norm in each county, piloted by what was then called the Ministry of Public Instruction. In the present instance of the Seasonal Observatory, a simple protocol established by scientists allows everyone to collect an ensemble of signs which will be analysed and put into perspective by laboratories. From North to South and East to West, the quest for evolution modifying signs is done by hundreds of volunteers in real time (fig.4). The observatory then exchange with different researchers who can then refine the field of research.

fig 4: mashup of participants in 2008 – source: ODS -

When asked about their motivations for joining this network, some contributors mainly mention their care for curiosity, alterity and pride to participate in this programme with a globaphobe essence. Attendance is a constant put forward by participants over a quarter of whom also take part in other data-collection networks. Curiosity and attendance themes may be put together with the sought after return on investment issue. It seems that frequent reports given to participants, whose conclusive content is submitted to the IPCC, participate in an effective recognition of their on-site collection. That would consitute some sort of symbolical remuneration for

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[12] ODS: http://www.obs-saisons.fr as of 05/06/08
[13] *GIEC in French* (Groupe Inter-gouvernemental d'Experts sur le Changement climatique): http://www.ipcc.ch/

provided committments. Through our surveys, it appears that this form of cyberculture catches an audience yearning to get out of the conventional work group frame. Levy (1997a, p. 154) says that typology of public '*expresses the aspiration to constructing a social link not founded on institutional or power relationships but in association centred round common interests*'.

Beyond this collectively completed data collection, we observe a cohabitation and crossing of various expertises:
- individual and collective,
- beginner and asserted,
- profane and scientific

It is not a question of mistaking genres but, postulating, rather of the aptitude to consider the other, 'the ordinary individual', like a potential actor in a local or extended process. In the case of the Seasonal Observatory and whereas the territorial field of observation is pushed to national limits, we may state that this mutualisation of information participate in a process of territorial intelligence.

Lévy (ibid) says there is no '*transcending knowledge tank*' and knowledge is nothing more than what people know. Among the few volunteers who were asked, a great interest for knowledge capitalisation offered by the Seasonal Observatory programme is observed. It appears that this possibility to access knowledge offers actors a baggage or some sort of 'seed' apt to favour new fields of curiosity [14] and in the present case, more particularly in the sustainable development (observation of the transformation of organic waste, of selected waste habits, of supposed and verified performances of the habitat declared in 'high environmental quality'). In this collective operation, together with Noubel (ibid), we notice that there is a migration *of collective intelligences towards a collective intelligence*; not in the fusion of individual intelligences but in the recognition of singularities a few attributes of which can be distinguished within the Seasonal Obervatory operation
a) autonomy of individuals, creators of meaning
b) emancipation of a subjective space freed from state and economic constraints
c) decentralisation of knowledge and powers
d) aggregation of small exchange units

The logic of sign mutualisation which presides over the functioning of the Seasonal Observatory system exists in other countries too: 'blossom' operation in New Brunswick, 'apfelblütenland' (apple tree blossom) operation in Germany and more recently in 2008 in Sweden, 'Svenska fenologinätverket' operation (Swedish phenological research). Yet, this rationalisation of information mutualisation usually is correletad to internet usage; but the equipment rate in France and in Europe, still fluctuating still, puts even more limits to a balance representativity. The extension of public equipments and emerging years and generations will gradually erase this technological entry pass to turn sign mutualisation into one of the tools of territorial anticipation.

6. Conclusion

Beyond technical experiments led by experts and specialists, the territory develops new approaches of knowledge management. Among other things, they are based on the multiplication of information collection and its display to 'ordinary individual'. If the programme's frame and protocols naturally belong to the scientific domain, mixing scientists and territory's inhabitants to data interpretation is a way to develop. Participating in mutualised data collection makes inhabitants go from a passive state to that of judge voter, actor of local governance. Citizens ought to be further associated to collected signs being put into perspective and thus give them back their part in the 'local orchestra'. This collaborative concept, a tool for governance, *lifts citizens* Von Reibnitz says *from an ignoring certainty to a thought uncertainty*.

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[14] The correlation between events requires an exploring investigation founded on a representative sample.

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