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Observation: Concepts and Implications

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Abstract:

The professions associated to the analysis of territorial dynamics have evolved together with the technique and in particular The Technologies of Information and Communication. (TIC). If "the research and the interpretation of the types of space organization is a major task of the geographers" (Sède, 2002), it is equally important that the comprehension of these spatial organizations should go through the identification and comprehension of the performance of the actors who are upstream, the latter ones being strongly defined by their institutional position or not, as well as by the resources or constraints they are associated to (Jeannot, 2003). At the same time, the methods of analysis, which have continuously evolved as well, are nowadays reinforced because they dispose of more and more information (Moine, Sède, 2001) and it is now possible by means of certain observation tools to carry out in-depth analysis of certain geographic spaces (Moine, 2007), although without being able to correctly reproduce, by means of the same tools, the action logics that prevail and that make territories out of them. And even when dealt with spatial analysis (without considering the actors' logics), there are often some difficulties to overcome in order to mobilize reliable and comparable information updated on a regular basis. In this way, the observation tools grow in number, the informatics developments allow it, but very often they are not conceived in a general perspective which could allow in the same time the representation of the territories, their observation, helping in making decisions and support the local governance. We are actually dealing with understanding how a range of measures could be developed around the interaction among actors, but also between actors and data, which they possess and/or make use of, in order to develop a local "territorial intelligence".

Keywords:

Observation, territory, indicators, information.

We wish to structure again a range of concepts, in order to enlighten the basis of decision-making in land settlement, taking into account the new technologies of information which are nowadays applied. Therefore, several concepts are structured around the question of observation within the framework of land settlement and action, no matter what the approached thematic might be; these concepts determine the action:

- the first concept is of course that of territory, it represents the methodological pedestal of our reflections and of the tools which result from it, and reveals the strong interaction which bounds the actors and the geographic space that they use, settle and organize;
- the second concept, that of observation, deals with the actions which will allow to follow the territories' evolution; how we represent this complex system and how we interpret the information which describe it;

- the third, that of governance, questions us upon the means of supporting the reflection of territorial actors, no matter who they might be, through a better help to a coordinated decision;

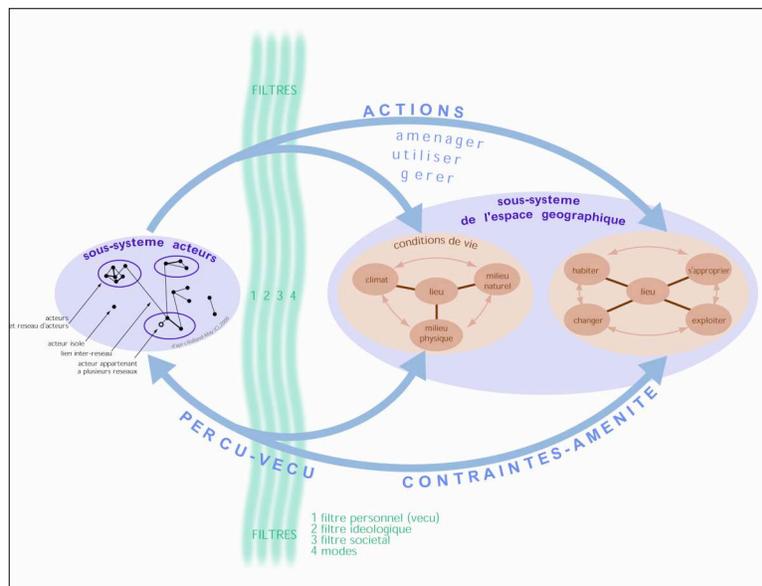
Once these concepts and their reciprocal relations are defined, we should ask ourselves what connects them and allows by means of a general approach to speak about territorial intelligence, by referring to the question of interaction between actors, information and the tools at their disposal.

I. Structured concepts for a better decision-making

1. The territory is a complex system...

The territory is a system, for that it takes on the range of properties specific to the complex systems (Moine, 2006), in terms of structure and dynamic, which rises up the question of time's irreversibility and the fact that it has to be taken into account. This system is made out of two sub-systems absolutely inseparable: on the one hand, the actors, reunited by their mutual performances which lead to using, settling and administrating the second sub-system which is the geographic space, made out of places and objects which interact by the will of their location and especially through the facilities and restrictions that they provide to the actors (Fig. 1).

Figure 1: The loop of feedback in land settlement



Note:

Sous-système acteurs = actors sub-system

Acteurs et réseaux d'acteurs = actors and networks of actors

Acteur isolé = Isolated actor

Lien inter-réseau = Inter-network connection

Acteur appartenant à plusieurs réseaux = Actor belonging to several networks

Perçu-vécu = Perceived-experienced

Aménager, utiliser, gérer = Land settle, use, administrate

Sous-système de l'espace géographique = Sub-system of geographic space

Conditions de vie = Living conditions

Climat = climate

Lieu = Place

Milieu naturel = Natural environment

Milieu physique = Physical environment

Habiter = Live

Changer = Change

S'approprier = Appropriate

Exploiter = Exploit

Filtre personnel, idéologique, sociétal = Personal, ideological, societal filter

Source: Moine, 2007.

The loop of feedback in land settlement, from a general point of view, is born out of this interaction; it represents in fact the combination between infinity of loops of positive and/or negative feedback which put the territorial systems under pressure, meaning in a more or less stable balance. There results a territorial complexity built out of multiple memberships and intersected networks, due mostly to the labyrinth of socio-spatial mechanisms and to territorial coalitions, encouraged by the States, as emphasized by Cox (1998). We rely here mainly on the principles specific to the complex systems, based mostly on the notion of dynamic, very well organized and strongly interactive.

Such systems, whose organization is made out of hyper cycles (several loops of feedback, closed one into another), can difficultly be made subject of an analysis which consists of reducing them to little isolated units. The presence of loops of positive and negative feedback provides them with a great sensitivity to outside conditions, even to oscillations, as well as with a certain degree of autonomy, which makes them non-predictable hence non-controllable (Swartz, 1994).

Therefore, the geographic space exists for a long time which can overtake the time of existence of the territory. Actually while the spatial structure is made durable in time, the systems of actors and the performances that result from them seem more fluctuant. If we consider the three major temporalities of a spatial system:

The fast dynamics (...), the slower ones of the succession of states of the system (...) and those of the longest time which determine the existence of systems (Durand- Dastès, 1999),

we can say that the long time is that of the existence of the geographic space and, in some cases, it can also be the one of the territory. The "territory" system has the "capacity (...) to integrate in its functioning a disruption without modifying its qualitative structure" (Holling, 1973, p. 1-23). Thanks to this, the system is maintained while evolving and if the geographic space presents a growing complexity provoked especially by the multiplication of anthropogenic objects, by their frequent transfers and relocations, the systems of actors assist to the growth of their own complexity as well. There are witnesses of the phenomenon, especially

a wave unknown until then of new cuttings associated to politics of decentralization and an abundance of intervention and mobilization areas established by the new territorialized actors called of the civil society (NGO, associations, groups of entrepreneurs etc) and their international partners (Antheaume et al., 2005).

Hence, there is absolutely necessary to keep an eye on the geographic space, in order to guarantee a certain continuity between the decisions that will be made by the actors who will follow concerning a reference geographic space, with more reason because one organization (actors) could disappear, but the started project is kept. Therefore, the territories, considered as complex systems, are in permanent evolution, which introduces a second concept strongly bound to the first one: the observation.

2. ...which needs the creation of observation tools...

The observation does not exist without its actors, so without observers, it refers to time within the specific geographic framework, it places space at the core of its preoccupations. The observation is defined as the action of observing, of attentively consider the nature, the man, the society, in order to know better¹. This definition gets a totally different meaning of we refer to the territories' specific issue, this being related to the complexity of the examined system. The observation integrates the notion of time and that of irreversibility; hence we deal with observing in time phenomena characterized by their possibility of evolution (Casanova, 2008). Or, these phenomena must be described very precisely so as to present exactly their evolution, with no ambiguity. When we deal with complex systems whose behavior is particularly unpredictable – this happens with the socio-spatial systems –, the observation has to be based on reliable data which describe in a coordinated way these systems. The observation consists then of an eye kept for a long period of time on a given system, described by a range of a gross data, which can be combined to produce indicators shared by a community. This is synthetic information, fruit of choices and interpretations. Among others, this brings about the question of indicators, which, starting with multiple and varied data, allow representing the consequences of the use, land settlement and administration of the geographic space by the man.

1. Action of scientifically observe (a recorder, described, measured phenomenon). Attentive surveillance to which a being, a phenomenon or a system is subject (Le Robert, 1992).

The indicators come out of several different logics, describing the condition of the system (diagnosis), the impact of the settlement policies (evaluation), or the possible evolutions of the system (prospective). Moreover, according to their organization within the observation tools, they will allow either approaching some themes (population, accommodation, employment etc.) or some issues, these ones being situated at the interface between different themes (insecurity, for instance). Finally, the observation implies a double share of information, upstream so as to supply the observatory, downstream so as to exploit it in a reasonable manner. The data and the indicators will influence the perception that we have on the observed systems and determine our look and our selective attention. Here, an important loop of feedback connects perception and observation. This puts again the observation tools at the core of the systems of actors under pressure on a given territory, meaning at the core of governance.

3. ...which support the local governance

The governance is a relatively ambiguous concept. It suggests in some cases the power that certain actors put up in order to counterbalance the traditional action and the relative lack of commitment from the part of governments and institutions which control the State. The term refers as well to the interactions between the State and the society, i.e. the coalition systems of public and private actors, who, by means of coordination measures, have as purpose to make the public action more effective and the societies more easily governable. This goes for all levels. We consider that governance approaches the second definition and is based on the complexity of relations which join the actors of a territorial system, with the purpose of maintaining its stability on the basis of contradictory relationships which need at a certain moment an agreement, within "a continuous process of cooperation and composition between different and conflicting interests" (Smouts, 1995, p. 88). It is not only about the sphere of particular interests, as defined by Hegel in opposition with the State:

"In the civil society, each member is an end to himself/herself, all the rest is nothing for him/her", but a combination of interests which in a general approach and thanks to a set of rules and/or contracts do not go against the general interest. Hence, the governance has to bring together the range of actors grouped within a territorial system. We actually deal with "a process of coordination of actors, of social groups and institutions, so as to fulfill proper purposes collectively discussed and defined in fragmented and uncertain environments" (Bagnasco, 1997, p. 38). It highlights the variety of actors who interfere or who can interfere in the administration of public businesses and, as for what we are interested in, in a territorialized framework, situating the governance at the interface between sociology, political science and of course geography. It is in this context of contradictory relations that the observation gets all its meaning, around the shared data, collectively validated so as to establish diagnosis and carry out studies which allow guiding the action.

The territorial intelligence relies therefore on these three concepts by mobilizing the new technologies of information. Its base relies on the notion of territory as proposed, the actors' performances producing the organization of the geographic space according to many constraints, physical as well as organizational and which are materialized especially in many planning, orientation or territorial coherence documents currently requested. The territorial intelligence is hence described as follows: the organization of the set of used and shared knowledge by a set of actors in the framework of a given territory, so as to collectively observe in the purpose of a better governance. The territorial intelligence passes through a reciprocal organization realized within a network, so as to support the citizens' participation, to enable the partnership among territorial actors for a general and balanced approach on territories². However, territorial intelligence will not be formalized without the adherence to a shared vision of territory and especially on common goals.

We are now trying to concretely illustrate the problems which arise in the framework of observation and which could influence the quality of governance through the performance of the tools set for helping the decision-making. The territorial intelligence depends directly on the observation and influences in this way the evolution of territories through the knowledge about actors, meant to be helpful in making decisions. We therefore find a well-defined structure of the geographic space, the actors and the governance which connects them mainly by means of observation tools.

2. ENTI: European Network of Territorial Intelligence.

II. At the core of each concept we find datum

1. Observation and observatories, at the border between real and knowledge

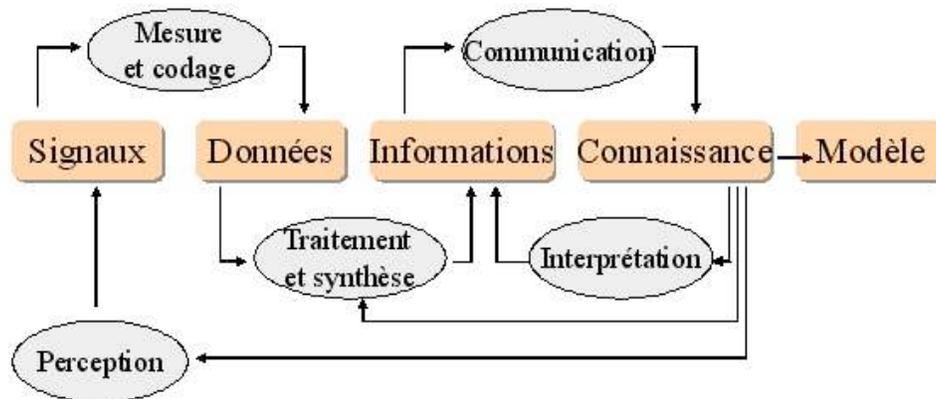
The development of observatories, whether we deal with observation of territories, observation of sociologic phenomena or economic or environmental ones, is strongly connected to three phenomena:

- the growing availability of data;
- the growing complexity of actors' performances and of the used, settled and administrated geographic space;
- the growth in the expectations concerning knowledge and evaluation of actions.

In this way, from a cognitive point of view, the availability of data, together with an easier spread of information, enabled by the Technologies of Information and Communication (TIC), situate the observation issue in a context that we now have to define.

The cognitive approach leading to the production of knowledge can be illustrated under the shape of a continuum starting from what is real (whose signals we perceive) getting to knowledge and even beyond it, to the establishment of a pattern³ (Fig. 2).

Figure 2: From real to knowledge



Note:

Signaux = Signals

Données = Data

Informations = Information

Connaissances = Knowledge

Modèle = Pattern

Mesure et codage = Measure and code

Perception = Perception

Traitement et synthèse = Treatment and synthesis

Communication = Communication

Interprétation = Interpretation

Source: Sède-Marceau (de), 2002.

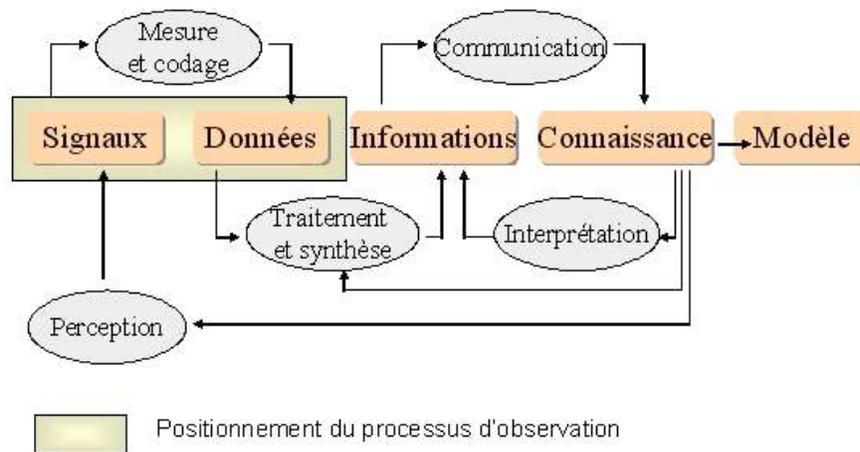
The acquisition of knowledge related to territory, major objective prevailing over the decision-making, can be assimilated to a learning operation, i.e. a change in the capacity of thinking, representing and building the examined object under the effect of data. The researches conducted in cognitive sciences and in informatics reveal the fact that knowledge is the result of the data outside the learner, of the interactions with its environment and lastly the inside information tools, especially the memory tools.

As emphasized by Piaget (Piaget, 75) quoted by Noucher (Noucher, 07, p. 9), "the intelligence is only a more elaborated form of the biological adaptation. Hence, the processes through which learners build their own mental structures are realized in interaction with the environment". The observation is

3. Establishing patterns, so formalized representations of the reality whose objective is to explain the phenomena and the relations between them. This purpose involves implicitly knowing this reality.

therefore part of this paradigm⁴ of knowledge. In order to better determine the issues of the observation, its relevance within the territorial approaches aiming the description, the analysis beyond the help in decision-making, it is important to place it within his continuum. Formally, the observation, considered as a constant attention over a subject but also as a “tool for collecting data”. (National Institute of Telecommunications) is situated upstream the process of generating knowledge (Fig. 3).

Figure 3: The observation within the process of generating knowledge



Note: see Figure 2

Source: Sède-Marceau (de), 2002.

Integrating the reception of signals coming from the real world and the production of data, it very much influences knowledge, since it is this first step that will determine the set of properties and specific traits of data supplying the decision-making. This obvious fact for everybody seems to be quickly forgotten when the observation projects are actually embodied. In fact, how many decision-makers or studies conductors, technical experts, or even researchers actually reflect upon the question of quality of this transmutation which makes the transfer from the level of perceptions to a more formal one, that of data?

By definition, the observation implies the logic of description. So, in its widest acceptance, the description means gathering the observation carried out upon a certain phenomenon so as to provide its coherent and complete image. For the territorial observatories, we deal with representing the geographic space in connection with the users, settlers or administrators. The description has to lead to a representation of reality as exact as possible. It is an important step which results from the observation and prepares the analysis. The quality of the description determines the quality of the analysis' results and the established policies of land settlement or administration.

There is however a distortion between the observation, as defined and used by the sciences (sociologic observation as well as observation of physical and biological phenomena) and the observation initiated and performed by the territorial actors on the territory as object.

This distinction refers firstly to the object of observation. While the “scientific” observation appears actually as an approach exterior to the object itself, the territorial observation proves to be a lot more complex, since the “observers” are at the same “observed”. Actually there are many observatories set up by institutions, territorial collectivities that after all are watching themselves, through the territorial mutations that they have more or less directly initiated!

In terms of objectives another distinction has to be made. Whereas the scientific observation wants more a first decoding of the object for its description and then its understanding, the territorial observation aims, by means of reciprocal knowledge, at providing the interpretation keys for the complex systems

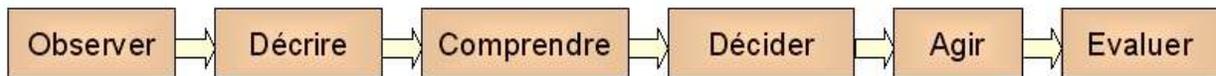
4. A paradigm designs the range of issues proper to an object of study and the techniques of this study.

territories are. As emphasized by Christian Estrosi in his short speech of presentation of the observatory of territories from DATAR (today DIACT),

By issuing its first report , the observatory of territories meets many expectation and especially that of better sharing, starting now, the available knowledge on territories, too often scattered or known only by specialists (http://www.premierministre.gouv.fr/information/actualites_20/presentation_rapport_observatoire_territoires_54646.html, December 2005).

In this context, we deal more with knowing in order to understand but also with knowing in order to take action, to decide, to evaluate (Fig. 4).

Figure 4: From observation to action

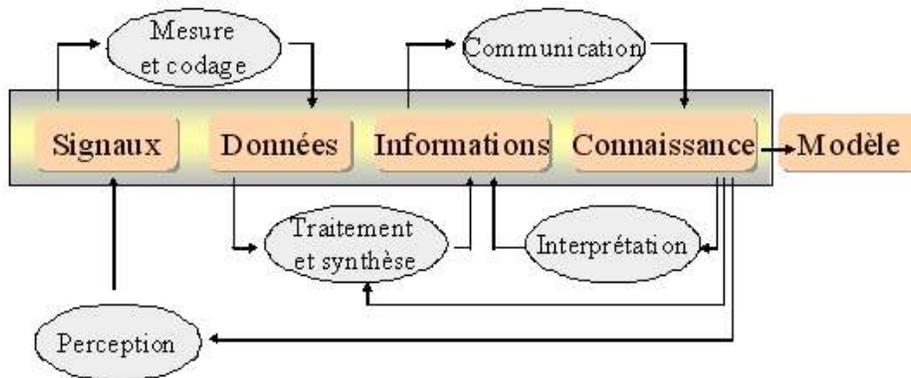


Note:
Observer = Observe
Décrire = Describe
Comprendre = Understand
Décider = Decide
Agir = Take action
Évaluer = Evaluate

Source: Sède-Marceau (de), 2008.

As far as methods are concerned, the observatories development does not always meet a formalized and validated approach. The projects sometimes rely on essentially organizational approaches whose objectives consist in enabling partnerships around the themes of the observations. We can therefore associate “the observatory” to an organizational device of the type “studies department”, divided between different organizations and whose objectives are to regularly produce knowledge upon the territory and/or the analyzed theme. In some other cases the projects explicitly rely on the creation of a computerized tool, such as shared database, upon which a set of synthetic data, a base for territories knowledge, will be produced. No matter what, the observation as carried out within the orchestrated or not observatories can be assimilated to the creation of information and knowledge (Fig. 5).

Figure 5: The territorial observatories, in the process of generating knowledge



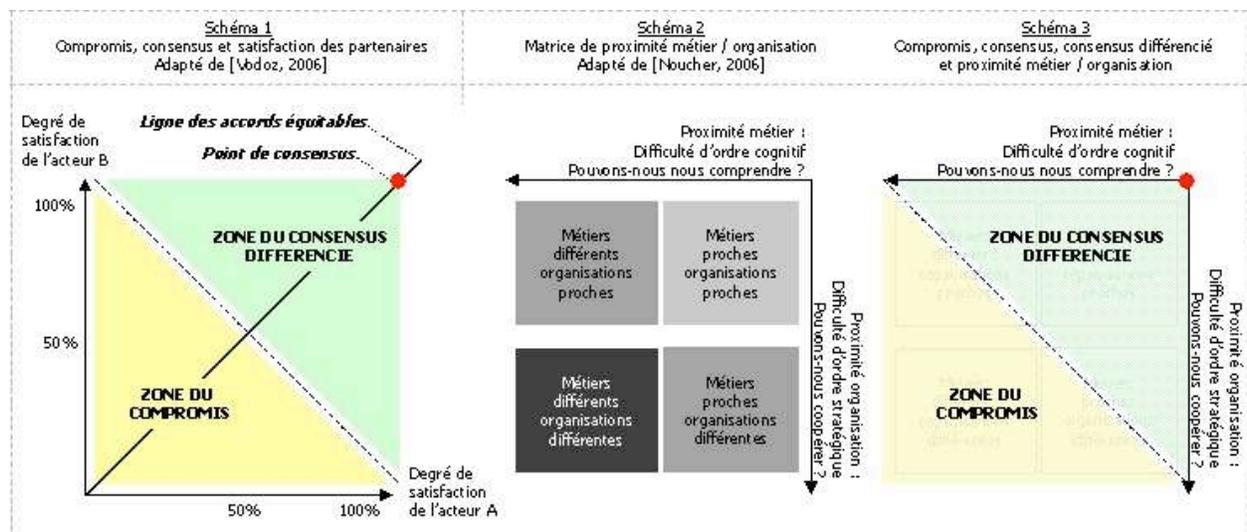
Note: see Figure 2

Source: Sède-Marceau (de), 2008.

However, in all situations, the objective is to produce together what would be impossible to produce separately. It is actually through the integration of multi-sources and multi-thematic data that revelatory processes and characters of the complexity come out. Referring to that, we can mention the interest of the combination of socio-economical data and technical data on the buildings in order to develop behavior indicators for energy-consuming (Ibrahim *et al.*, 2007). Another example, the use of a combination of financial data, of mobility data, as well as more “classical” data defining the profile of households (data of INSEE – National Institute of Statistics and Economic Studies) allowing the evaluation of indicators of the cost of disaffection for the suburbs households⁵.

Therefore, the objectives of the observation of territories are similar in a way to a certain kind of data coproduction, whose mechanisms were identified by Noucher (Noucher, 2007). This “connection” between observatories and coproduction allows us to point out the favourable conditions for a development of the essential participative logics in the framework of such projects (Fig. 6). As for every socio-cognitive mechanism, the stakes are then to fulfil understanding among actors of different cultures and professions and very often of different strategies. In this way governance will be set up on the basis of data sharing and reflections upon shared indicators.

Figure 6: Strategic and cognitive conditions favourable to different participative logics of coproduction of geographic data



Note:

Compromis, consensus et satisfaction des partenaires = Compromise, consensus and partners' satisfaction

Degré de satisfaction de l'acteur = The actor's satisfaction degree

Ligne des accords équitables = Line of fair agreements

Point de consensus = Consensus point

Matrice de proximité métier/organisation = Proximity matrix for profession/organization

Difficulté d'ordre cognitive = Cognitive difficulty

Pouvons-nous nous comprendre? = Can we understand each other?

Difficulté d'ordre stratégique = Strategic difficulty

Pouvons-nous coopérer? = Can we cooperate?

Source: Noucher, 2007.

5. This study is currently conducted by The Urbanism Agency of the Besançon Agglomeration, in collaboration with the County Agency of Information on Accommodation in Doubs (France).

2. The indicators, revealing the quality of collaboration

On the background of assimilation of the observation to the data coproduction on the territory, it is essential to come back to the concept of indicator, which is at the core of the observation development.

In the regular vocabulary, an indicator is a datum which provides an indication (Le Petit Robert). For instance, the INSEE defines the concept of economic indicator as follows:

An indicator is a measuring instrument for an economic activity (or a range of activities) allowing observing on a regular basis the economic evolution generally on an infra-annual basis, as the real GNP, the industrial production, the prices level, the unemployment rate, the households' confidence indicator,... (INSEE, <http://www.insee.fr>).

In the more and more complex framework of the administration and planning of territories, the public and/or private decision-makers ask for objective data in order to get to know and understand their competences territories and to evaluate the impact of the policies they initiated by their decisions. Apart from providing raw data, the conception of indicators appears therefore as a privileged means of transmitting synthetic information and the indicators become in this way also a key-element of reflection (EspaceTemps.net, <http://espaceTemps.net/document1708.html>) and, beyond decision, even of evaluation.

In this way the notion of indicator would contain that of objectivity. This leads us to the descriptive dimension of the observation, whose objectives are to reflect the reality as objectively as possible. Hence, there is a strong connection between the objectivity of the description, the observation and the indicators, no matter what the established goals might be. However, this analysis has to be detailed. In fact, regardless of the considered themes or the reference scales, the produced data are far from being objective. As pointed out by Claramunt (Claramunt, 2007) or Joliveau (Joliveau, 2004), the reality is orchestrated. In fact, regardless of the interests, passing from the intention of the observation to the establishment of the tool meant to provide descriptive elements of reality is always object to instrumentation, whether of topographical issues, or collectors, surveys etc.

Very often, the geographer as well as the land settler or the decision-maker will be directly confronted to the data most often located without having had access to the codification of the initial information, not controlling any of the choices preceding the acquisition or the methods of acquisition. Besides, even if he/she controlled this dimension having therefore the opportunity to acquire data by himself/herself, these would be the result of the choice influencing the whole life cycle of the data, the tools and the techniques used for their collection in the choice of representation, passing through the used sampling patterns.

Moreover, an indicator, as suggested by the INSEE in its definition of economic indicators, has to provide on a regular basis knowledge elements allowing a constant view over phenomena. Introducing the periodicity brings us to specify the temporal implication of the indicator, allowing a real surveillance of the observed territories. We are then dealing with monitoring indicators. The questions are then raised upon the temporal monitoring granularity, taking into account the material contingencies (very often materialized in terms of cost) as well as the dynamics specific to systems under observation.

Finally, in the field of territories observation – and we are now dealing with the geographer's actual activities – an indicator, as emphasized by Joerin *et al.*, 2001) must enable the perception of the heterogeneity and the spatial variable of the phenomena within the territory. This ability can simply be acquired by means of simple cartographic approaches based on putting thematic data in a certain spatial context. But it might be necessary to develop more complex indicators, providing information about the shape, the structure and the organization of phenomena. We are dealing here with the spatial dimension of the indicators (location, representations, relevance scale...), a dimension exploited in contexts of observation of mobility for instance (we can think of accessibility indicators (Sède *et al.*, 2008), built on the basis of location, distance/time, services level...) and very much in demand nowadays, mainly in connection to the complexity of individuals' peregrinations and to the needs of fulfilling their demands.

An indicator appears therefore as an indicating variable, significant for a state or even an evolution (variation rate for example) to a given perception level and whose interpretation is generally conducted according to norms or comparisons. Hence, it is included in the framework of defined spatial and temporal scales, adapted to the objectives it has to meet. So, an indicator refers generally to observation zoning

and frequencies which can differ depending on the observers. It is therefore essential to reflect upon the relevance of indicators according to the involved analysis scales. This last comment brings us to questions such as: “who observes what and at what level of time and space scales?”, inferring that the indicators produced in a built-up area around a city can only be complementary to those produced in a Region. On the basis of states synthesis, the indicators can though meet different objectives, from the diagnosis to the evaluation and prospection.

The indicator makes perfect sense within the observatories which allow by definition mutualising and integrating data of multiple proveniences (Sède *et al.*, 2008). Its relevance, its synthesis qualities as well as the evaluation potential they contain are functions of the level of quality and collaboration developed by the partners reunited around the observatory projects. Hence, a great number of observation systems do not go beyond provision of basic descriptive indicators and provide very few indicators resulting from the coproduction of data, made out of a range of combined variables (for instance IDH) taking into account the time, the space, or the two of them and being based on common objectives of the actors.

3. The observatories: an application of the territorial information systems

The territorial observation creates information by means of indicators production. Analysing closer the generation of these synthesis information, it is possible to detail the process. The observation can actually be discriminated into four different phases which do not result from the same logic:

- Collecting data
- Storing and organizing data
- Processing data for producing synthetic information
- Disseminating synthetic information under an adjusted shape, aiming at different targets (decision-makers, administrators, citizens...)

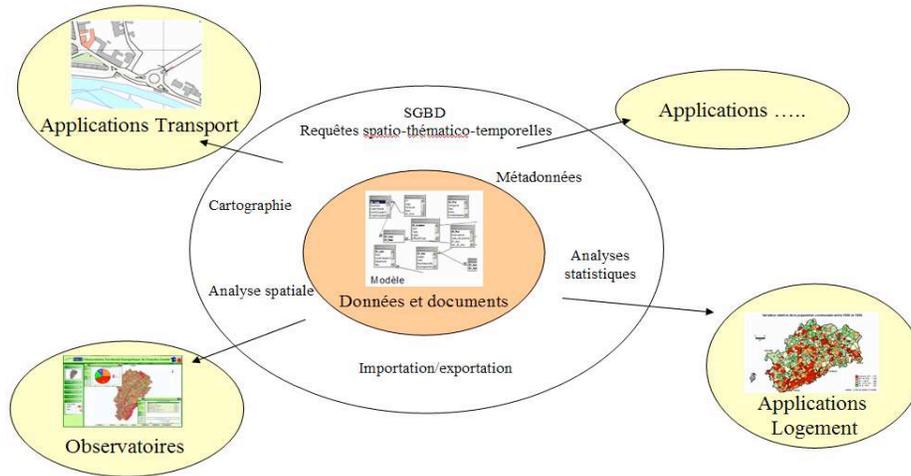
This analysis determines several commentaries.

- Firstly, the observation cannot be assimilated to a simple function.
- Secondly, each identified phase is essentially different and in the view of observation computerization, they do not result from the same logic. Storing results clearly from the “database” logic where the application frameworks belong to the middle/long term from a temporal point of view, to the multi-scales from a spatial point of view and to a multi-partners dimension from an organizational and thematic point of view (Mennis *et al.*, 2002). This brings us down to the notion of territorial complexity and introduces the establishment of hybrid solutions, specific to sciences and technologies of geographic information for monitoring the spatial dimension, more classical when we get down to monitoring thematic data. Processing deals clearly with an applicative logic-this evolves according to the spatial, thematic and organizational mutations specific to territories.

- Finally, at the extremities of the process, the entrances/ exits around which the information flow is structured appear as “Achilles’ heel” of the device. Firstly, at the source, since the whole structure relies on supplying the data system⁶. Afterwards, at the exits, because the observatories are essentially conceived to produce information and must meet this expectation.

6. We can here think of H. Pornon’s commentaries on the “empty shells”, expression referring to the observatories empty of their substance because of the lack of data! (Pornon, 2007a).

Figure 7: The concept of Territorial System of Information (TSI)



Note:

Applications Transport = Transport Applications

Observatoires = Observatories

Applications Logement = Accommodation Applications

Requêtes spatio-thématico-temporelles = Spatial-thematic-temporal requests

Cartographie = Cartography

Analyse spatiale = Spatial analysis

Métadonnées = Metadata

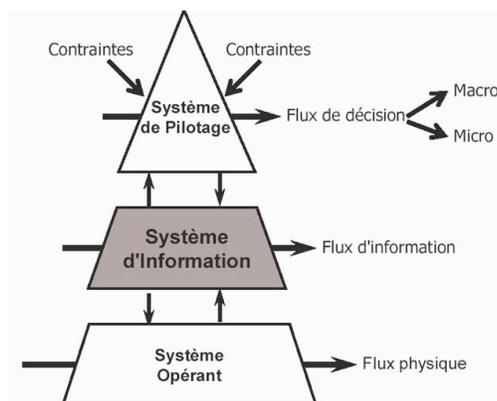
Analyses statistiques = Statistic analysis

Importation/Exportation = Import/Export

Données et documents = Data and documents

Source: Sède-Marceau (de), 2008.

Figure 8: The concept of system of information at the interface between decision and action



Note:

Contraintes = Constraints

Système de pilotage = Piloting system

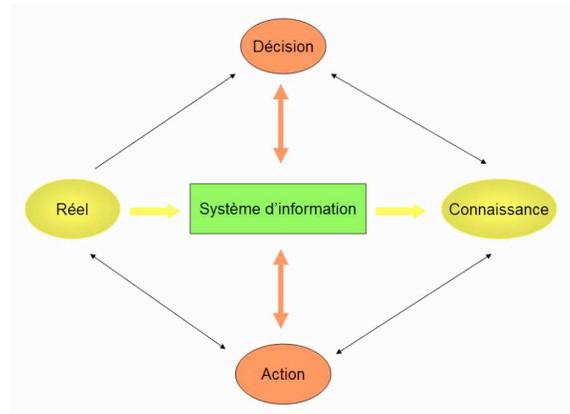
Système d'information = Information system

Système opérant = Operating system

Source: GET/INT/DSI – S. Assar.

In this context, the observation tools belong to the logic of information systems, defined as a range of elements participating at administrating, processing, transporting and disseminating information. The instrumented observatory can therefore be considered as an application fuelled by the Territorial System of Information, just like other kind of applications of more targeted professions (Fig. 7). In the company's world, these systems are clearly identified as an interface between the piloting system (hence, the decision one) and the operating system that can therefore be assimilated to administrators and other actors having a direct impact on the territorial system (Fig. 8).

Figure 9: The strategic position of the SI



Note:
Réal = Reality
Action = Action
Connaissance = Knowledge
Décision = Decision

Source: Sède-Marceau (de), 2008.

Hence, the information flows circulating in the information system have a vital character. They will allow decision-makers to keep in touch with the field, which is, in our context, the “reality” of the territory, materialized in structures and operating modes. On the other hand, the actors will also need to exploit the information flows coming from the observatories, in order to gauge their interventions, but especially to optimize their operating mode. For instance, we can mention the importance of characterizing spaces in terms of land costs to advise and orient the private individuals within the purchase projects.

In other words, in the logic of the systems of information, the observatories must allow, in the framework of the issues they have been initiated for, to all the actors in the territory acquiring the information and knowledge they need in order to make decisions and take actions (Fig. 9).

Conclusion: The observation, at the core of the territorial intelligence for better governance

It appears today that several actors interfere on the geographic space and that the help in making a decision goes through mutualising many data, multi-sources, multi-thematic, multi-scales. It is actually essential, in order to improve the comprehension of the territories functioning, not to focus only upon the exploit of business data, but to mix them with more synthetic data which allow a general view over the approached issues. However, it appears that exchanging data is technically difficult, in spite of the efforts made in this field, especially in terms of standards (Pornon, 2007 a, b et c). They are time-consuming and because of the lack of time they are neglected, which involves more superficial analysis, without setting common references among different actors in charge with the land settlement.

As a final result the governance is weak, because the different views of the actors do not go together, the actions are scattered, little appropriated by all the participants. It appears therefore essential to set the establishment of observation tools on two approaches:

- identifying the professions of actors sharing a tool;
- placing the secured datum at the core of the approach.

Establishing observation tools involves being very much aware of the needs of the different actors who will use it. It is consequently essential to gather information concerning their practices, their intervention or administration territory and their prerogatives. These data are the ones enabling to determine better the needs of the future users. On this background it is essential to carry out qualitative surveys (by means of interviews) in order to get thorough knowledge of the professions and competences of different actors, to identify precisely the data that they mobilize in their professional activity as well as the administration and exploitation of these data; this allows identifying precisely their needs of information (data, indicators...).

These interviews have to emphasize the necessity to enable the meeting between the technicians and decision-makers around the centres of interest shared by different organisms throughout networks more or less formalized. Most often confined to approaches connected to the exercised profession, the actors rarely have a general perspective on the territorial operation mode and this happens even if they express their need to broaden their knowledge area. Collecting data does not have to represent a juxtaposition of several individual redundant activities through which the spatial and temporal dimension of the problems is not taken into account.

Actually the question of data is crucial, sharing and using them have the role of some bolts which we simply have to remove. In order to mobilize a great number and to embody the knowledge community gathered by the observatory, it is important for the project holders to be completely aware of these bolts and to mobilize the necessary energy and methods so as to turn these obstacles into operational objectives which could strengthen the tool appropriation and exploit by means of:

- Mutualising the standardized data easily exploitable by means of fast and efficient functionalities, strengthening in this way the basis of knowledge of the territory actors thanks to information (data, documents, maps) until then kept only for a restraint circle and thanks to shared indicators which come out of it;

- Securing the transmissions and the storing place;
- The statistic secret.

If the partners' adherence to the suggested device is decisive for the usefulness of the observatory, the core of the observatory is the data and they constitute the major point of the stumbling block. It is therefore important to show that the technology is totally under control and that the risks run by the suppliers are taken into account.

Bibliography

ANTHEAUME B. and GIRAUT F., 2005, *Le territoire est mort, vive les territoires: une (re)fabrication au nom du développement*, Paris, IRD.

ATLAN H., 1979, *Entre le cristal et la fumée*, Paris, Seuil.

AURIAC F., 1984, *Système économique et espace*, Paris, Economica.

BAGNASCO A. and LE GALES P., 1997, "Les villes européennes comme société et comme acteur", in BAGNASCO A. (ed.), *Villes en Europe*, Paris, Éd. La Découverte, p. 38.

CARROUÉ L., 2004, *Géographie de la mondialisation*, Paris, Armand Colin.

CASANOVA L., 2008, "Proposition pour une approche renouvelée de l'évaluation territoriale", *Actes du colloque Théo Quant, 10-12 janvier 2007*, Besançon, Université de Franche-Comté, forthcoming.

CASSEN B., 2001, "Le piège de la gouvernance", *Le monde Diplomatique*, juin 2001, p. 28.

CLARAMUNT C., COULONDRE S. and LIBOUREL T., 1997, "Autour des méthodes orientées objet pour la conception des SIG", *Revue Internationale de Géomatique*, vol. 7, n° 3-4, décembre 1997, p. 233-257.

COX K., 1998, "Spaces of dependence, spaces of engagement and the politics of scale, or: looking for local politics", *Political geography*, vol. 17, n° 1, p. 1-23.

CREVOISIER O., MOINE A., QUIQUEREZ F. and SIGNORET P., 2005, *Impact de l'accord bilatéral relatif à la libre circulation des personnes sur la région transfrontalière du canton de Neuchâtel et du département du Doubs*, rapport final, Neuchâtel/Besançon, Université de Neuchâtel (GRET) et Université de Franche-Comté (ThéMA).

CROZIER M., 1981, *L'acteur et le système: les contraintes de l'action collective*, Paris, Éditions du Seuil.

DAUPHINÉ A., 2003, *Les théories de la complexité chez les géographes*, Paris, Éd. Économica, p. 41-52.

DELVAUX M. and NYS C., 2002, *Géographie: lire le monde*, Paris, Éditions De Boeck.

DURAND D., 2002, *La systématique*, Paris, PUF.

ESPACETEMPS.NET, 2005, *Indicateurs territoriaux du développement durable*, available at <http://espace Temps.net/document1708.html>.

ELISSALDE B., 2000, "Géographie, temps et changement", *L'Espace Géographique*, n°3-2000, p. 224-236.

FRIEDBERG E., 1993, *Le pouvoir et la règle*, Paris, Éd. Seuil.

HOLLING C. S., 1973, "Resilience and stability of ecological systems", *Annual Review of Ecology and Systematics*, n° 4, p. 1-23.

IBRAHIM K. and SÈDE-MARCEAU M.-H. (de), 2006, "Fondements et méthodologie pour une modélisation dynamique des systèmes énergétiques territoriaux", Paper presented at the XLIIth Conference of the ASRDLF (Association of Regional Science of French Language) – XIIth Conference of GRERBAM (research Group on the Spaces and Network of the Mediterranean basin), on the theme: "local development, competitiveness and attractiveness of territories", SFAX, Tunisia, 4th, 5th and 6th September, 2006.

JEANNOT G., 2003, "Diagnostic territoriaux en DDE", in BION J.-Y. (ed.), *Le diagnostic territorial: un outil de l'action publique*, vol. 4, Lyon, CERTU, p. 15-22.

JOERIN F., NEMBRINI A., REY M.-C. and DESTHIEUX G., 2001, "Information et participation pour l'aménagement du territoire; Rôle des instruments d'aide à la décision", *Revue Internationale de Géomatique, spécial SIG et développement du territoire*, vol. 11, n° 3-4, Paris, Éditions Hermès, p. 309-332.

JOLIVEAU T., 2004, *Géomatique et gestion environnementale du territoire. Recherches sur un usage géographique des SIG*, Mémoire d'Habilitation à Diriger des Recherches en Sciences Humaines, Rouen, Université de Rouen.

LE BERRE M., 1988, "Débat autour de l'articulation des différents niveaux d'analyse", *Géopoint* 88, Avignon, p. 153-155.

LÉVY J., 1994, *L'espace légitime sur la dimension géographique de la fonction politique*, Paris, Presses de la FNSP.

MARCHAND J.-P., 1990, "Structures spatiales irlandaises et contraintes historiques", *Actes du Colloque Géopoint*, Avignon, p. 197-200.

MENNIS J. L. et PEUQUET D. J., 2000, "A conceptual framework for incorporating cognitive principles into geographical database representation", *International Journal of Geographical Information Science*, vol. 14, n° 6, p. 501-520.

MOINE A. and SÈDE-MARCEAU (de) M.-H., 2001, "Systématique et bases de données territoriales : des concepts et des outils pour une gestion raisonnée des territoires", *Revue Internationale de Géomatique*, Paris, Éd. Hermès, vol. 11, n° 3-4, p. 333-358.

MOINE A., 2003, "Évolution d'un espace transfrontalier: le territoire horloger franco-suisse de l'arc jurassien", *L'Information Géographique*, vol. 67, n° 1, Paris, Éd. Sedes, p. 21-34.

MOINE A., 2006, "Le territoire comme un système complexe : un concept opératoire pour l'aménagement et la géographie", *L'Espace Géographique*, 2006-2, p. 115-132.

MOINE A., 2007, *Le territoire, comment observer un système complexe?*, Paris, L'Harmattan.

MORIN E. (ed.), 1999, *Le défi du XXI^e siècle. Relier les connaissances*, Paris, Seuil.

NOUCHER M., 2007, "Coproduction de données géographiques : pourquoi, comment et avec qui? Pourquoi coproduire, avec quelles démarches participatives et en mettant qui autour de la table?", *Actes du colloque SAGEO CQFD-Géo, Clermont-Ferrand, juin 2007*.

PEGUY C.-P., 2001, *Espace, temps, complexité, vers une méta-géographie*, Paris, Belin.

PIAGET J., 1975, *L'équilibration des structures cognitives*, Paris, PUF.

ROSNEY J. (de), 2002, *Le microscope. Vers une vision globale*, Paris, Seuil.

SAINT-JULIEN T., 2000, "Quantitatif et qualitatif dans l'approche géographique: la modélisation en question", in LÉVY J. and LUSSAULT M., *Logiques de l'espace, esprit des lieux. Géographies à Cerisy*, Paris, Belin, p. 141-152.

PORNON H., 2007, "Bilan et perspectives de 20 années de Géomatique", *Géomatique Expert*, n° 57, juin-juil. 2007, p. 36-46.

PORNON H and NOUCHER M., 2007, "Bilan et perspectives de 20 années de Géomatique; Vers des SIG plus collaboratifs. Les communautés de pratique", *Géomatique Expert*, n° 59, oct.-nov. 2007, p. 54-60.

SCHWARZ E., 1994, "Crise conjoncturelle ou changement de paradigme?", *Les Cahiers du CIES*, vortex n° 1, Centre Interfacultaire d'études systémiques, Université de Neuchâtel, available at <http://www.autogenesis.ch/crisconj.htm>.

SÈDE-MARCEAU M.-H. (de), 2002, *Géographie, territoires et instrumentation: État des lieux, réflexions épistémologiques et perspectives de recherche*, Habilitation à Diriger des Recherches, Université de Franche-Comté.

SÈDE-MARCEAU M.-H. (de), GILLON P., MOINE A. and THIAM S., 2008, "L'accessibilité aux équipements collectifs de pratique sportive: méthodologie pour leur observation dans le département du Jura", in THÉRIAULT M. et DES ROSIERS F. (eds), *Information géographique et dynamiques urbaines 2: Accessibilité, paysage, environnement et valeur foncière, Traité IGAT*, Paris, Lavoisier.

SMOUTS M.-C., 1998, "Du bon usage de la gouvernance en relations internationales", *Revue internationale des sciences sociales*, n° 155, mars 1998, p. 88.

