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Bernard Marchand

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Citizen participation through e-planning : much hope and some illusions

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Bernard Marchand

Professeur émérite des Universités

marchand@mail.enpc.fr

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E-Planning, i.e the introduction of electronic methods in planning, the conditions for their use and their effects, is becoming an important issue : the ICPPIT03 gives a good overview of the domain. According to the some 75 contributions to the conference, e-planning seems to be developping in three principal directions: dialog between citizens and public administrations in order to apply and to obtain the multiple authorizations and permits modern men need to-day to live in society ; opening data bases, building and displaying maps on computer screens or on paper to inform citizens through the use of GIS ; allowing elected officials or administrative leaders to answer citizen queries through e-mail. These developments are just beginning and are supposed to have a bright future.

I would like to play the devil's advocate, to show exaggerated scepticism going beyond such satisfied enthusiasm, and to question some actual e-planning uses and effects.

Introduction :

The term “e-planning” is still very new and not clearly defined. It may include on one side the use of the computer in planning, for computing statistics, building data banks, mapping on GIS ; or communication through electronic means between citizens and municipal authorities. It may also concern private planning inasmuch as local and regional development, i.e multiplication of jobs and local creation of wealth are basic goals of planning. We will use here a quite general meaning of the term and try and present a first evaluation.

E-planning is developing quickly in industrial countries as technical obstacles are overcomed. The main limit to its diffusion was the so-called “technological gap” : private companies found it too expensive to build optic fiber networks in remote regions with a low population density. New technologies are bridging quickly the gap. For instance, many small municipalities, in the south-east of Paris, are getting access to Internet thanks to a parabola aiming at a satellite. From the parabola, signals are sent through WiFi channels to households : the system works very well, at prices equal to those asked in Paris. Other thechnologies, like the Wimax, offer also good solutions.

The rapid development of technologies, however, poses new questions. Communication implies an origin, a medium and a target for each message. As far as citizens are concerned, communication may flow *downward*, from some administrative authority to the population, *upward* when citizens make queries or criticisms, and *horizontally* with citizens trying to exchange opinions and consult each others.

Present use of e-tools in planning have mainly concerned the first type of flows, downward, for obvious reasons : it strengthens established authorities and all administrative structures have been built

to convey instructions downward. The second, i.e citizens making queries and expecting answers, has been often advocated but does not seem to have been much of a success ; the main concern of public or private authorities is not often to answer public questions. The third type of flows, horizontal exchanges between citizens, is by far the most interesting and the most dangerous for the powers to be : one should not be surprised that it has developed mainly outside existing planning structures. As we will see later, the example of the city of Parthenay, France, is instructive.

E-planning is a quite new field of research, with still fuzzy content and indeterminable limits¹. This is particularly dangerous because its scope is very wide, including the whole array of electronic tools and methods, political and human communication as well as business relationships through the computer. We will, in this text, deal mainly with e-communication between public and administrative authorities but we will indicate also some effects of electronic tools on business communications which have important impacts on regional development

Quite surprisingly, most applications of e-planning limit themselves to a few approaches : web sites developing municipal-public relationships or facilitating administrative tasks, direct communication with elected officials through e-mail, publication of maps through GIS.

The original advantages of e-tools over more traditional means of communication are not usually discussed. What are they ? Speed and convenience may come first to the mind. Is it so useful, however, in planning exchanges ? To send an e-mail in a few minutes or a letter in a few days does not matter so much. The problem is rather how to get a meaningful answer. Jürgen Habermas, in The Helsinki Conference (1999), saw in e-communications the ideal speech situation : it is *interactive*, offers an *equal access* to everybody and is *open to all*.

GIS documents are by far the most frequent examples of e-planning. A GIS map on screen may be impressive and the use of new software like Adobe's new SVG² allowing the user to build himself the map he needs on Internet is an impressive tool, but if the map is simple, would not it be sufficient to print it and to distribute it through mail ? If it is complex, crossing many types of information, will the public be able to understand and to analyse it ? For instance, mapping together a layer showing crime distribution in a city and another one representing ethnic groups, is straightforward. May not such graphic correlations, however, be dangerous and allow some persons to draw false but popular conclusions ? The efforts of the CNIL³, in France, shows the importance of the question.

So, what are e-tools main advantages when used in public or private planning ? Let us try and suggest the most useful ones :

1 – Understanding and influencing planning decisions : the easy circulation of messages up and down a hierarchy until the message has found the person able to answer it, to understand the citizens' concern, eventually to modify the decision;

2 – Consulting and downloading huge amount of data which have been accumulated, mapped and analyzed at the different levels of embedded territorial circonscriptions;

3 - Allowing intricate statistical analyses and simulation presentations through its computation power and its data bases and offering results easily understood by non-specialists.

1 See CASTELLS M (1989) *The Informational City, Information Technology, Economic Restructuring and Urban-Regional Process*, Basil Blackwell, Oxford.

2 S VG : *Scalable Vector Graphics*, a new development written in XML, has been developped by Adobe based on works from the Institut Polytechnique de Lausanne. It allows building maps based on GIS data on the client machine and can be downloaded freely. See for reference : www.adobe.com/svg and www.carto.net

3 Commission Nationale Informatique-Liberté, created by a 1978 law to protect citizens privacy.

There are, unfortunately, good reasons to doubt that present administrative and planning structures are able to make good use of such considerable advantages. E-planning relies today on unspecified but basic assumptions which do not seem actually met :

1)- **Administrative structures and problems of organization theory** : the first advantage implies that citizens and enterprises are structured in hierarchical organizations, facilitating a vertical flow of messages. What if decisions are not taken in a pyramid but within a much more intricate organisation ? And since information is power, what if many bureaucratic cells keep information confidential ?

2)- **Geographical structures and problems of topologies within territories** : The second one requires that communication go up and down hierarchical structures embedded one in the other : what if structures are not hierarchically organized by inclusion but overlap ?

3)- **The need for new software** : in e-planning, urban planners are using and advocating mainly the use of GIS. Are these softwares the best ones and the only ones for the tasks ? How to explain to a lay public results of powerful models without twisting their conclusions⁴ ?

This text tries and discusses some first answers to these questions.

1)- Organization Theory and the need for indetermination spaces :

In most developed countries, public administrations are supposed to be organized and work as vertical hierarchies. This is particularly true in Europe, where old monarchies have structured the countries, and where the Roman Empire built a fantastic example of organized power. It may be still more true in France where public administration actually began in the first years of the XIXth century, where the Revolution tried and created a rational order of local entities which Napoleon organized in the kind of a military hierarchy.

So, the public may have the impression that his queries have just to flow up the hierarchy until the message reaches the right person, able to answer the question or entitled to take or change a decision. Sending an e-mail would be a straightforward process. Such a quite naive belief explains why people are so upset when communication, even through e-mail, does not produce the expected results. A very interesting school of sociology, *Sociology of Organizations*, developed in the 1960's, suggests some interesting answers⁵.

Two postulates of the theory are fundamental for our discussion : one is that power is not an attribute of an agent but a form of relationship between two or several agents, subject to perpetual negotiation and changes. Power, as well as responsibility, is shifting within an administrative structure, which makes addressing the right person at the right time a particularly difficult task.

Second : each agent tries and manages for himself a niche of indecision, of personal freedom which constitutes the basis of his power. An agent who would transmit directly downward the instructions he receives and upward the informations sent to him without any change, would have no liberty and practically no existence : any electronic box could replace him. Experience shows that even

4 For the many pitfalls in data analysis, see for instance Ciceri M-F *L'analyse multivariée dans la géographie anglo-saxonne*, Thèse, Universiry of Paris-1, available on <http://www-ohp.univ-paris1.fr> et sur <http://Tel.archives-ouvertes.fr/>

5 Movement initiated by Michel Crozier : M Crozier (1965) *Le phénomène bureaucratique*, Le Seuil ; M Crozier, S Huntington & J Watanuki (1975) *The Crisis of Democracies*, New-York ; M Crozier (1994) *La Société bloquée*, Le Seuil ; M Crozier & E Friedberg (1977) *L'acteur et le système*, Le Seuil ; E Friedberg (1987) *L'analyse sociologique des organisations*, L'Harmattan.

weak and shy agents do not act as pure transmitters but always manage themselves some elbowroom within which they can act freely and thus exist. Actual power structures are almost always different, sometimes very different from the official organization charts.

An important consequence is the retention or transformation of information at each level, which makes communication particularly tricky. The vision of electronic messages flowing at the speed of light up and down administrative hierarchies and bringing information upward and answers downward is largely if not entirely an illusion. Of course, electronic means are not responsible. On the contrary, their apparent efficiency is dangerously eroded by such normal human behavior. Software has been designed to try and help people to communicate better within an organization and to work in teams : *groupwares*, as they are called, facilitate the exchange of notes or memos, allow participants in a network to send swiftly to each other suggestions, worksheets, images, to organize meetings taking into account each member's schedule, etc..⁶ It is all the more surprising that there are so few evaluations of their role in e-planning.

The French administrative system offers an excellent example, with its internal intricacies, to the Sociology of Organization, because it has old and powerful roots, offers a proud, sometimes arrogant appearance, is famous for its logical organization and sometimes noted for its inefficiency. It has been analysed in details⁷.

Power in French territory is organized in two parallel hierarchies : elected officials and central state administration. The Mayor, elected by the municipal council, is locally powerful but he has usually few resources available. In order to invest in important projects, he can float a loan but needs also a subsidy from the administration. To obtain it, he needs to build a good convincing technical file, which in most middle-sized or small communes, can be prepared only by competent engineers of the central administration. "Actually, technicians of the central administration have *de facto* a kind of monopoly on technical expertise for building, managing, repairing public works. Furthermore, for their experience, they are the best advisers to make a project successful. On the other hand, the public accounting officer can also help decisively in presenting a clear budget and giving sound advices for floating a loan."⁸ In other words, the Mayor depends largely on the good will of local civil servants from the State.

"On the other hand, contrarily to what so many people believe, these civil servants, engineers, public accountants or agricultural specialists are not entirely submitted to orders from upper hierarchical levels. They must also take into account locally elected officials they cannot afford to antagonize. Surveys show that mayors consider often local administrative officials not as a worrisome tutelage but as their best allies in defending local interests against central administration. In a more complicated way, the most important political leaders play a coordinating role among local civil servants in such a way that administrators at the upper levels can act upon their subordinates only with the help and collaboration of local politicians."⁹

As a result, information and decisions do not circulate within two vertically separate flows. They move in very complicated ways, in zigzags, where electronic messages must necessarily get lost. Vertical communication is usually quite limited. System regulation depends on collaboration at each level between elected leaders and technical specialists, with a dominance of horizontal communications.

6 The most famous groupware is *Lotus Notes*, bought at a high price by IBM and widely distributed now-a-days, with his complement on intra- and extra-nets : *Lotus Domino*.

7 P Grémion (1976) *Le pouvoir périphérique*, Le Seuil ; J-P Worms (1966) « Le préfet et ses notables », *Sociologie du Travail*, n°3, pp 249-276 ; M Crozier & J-C Thoenig (1975) « La régulation des systèmes organisés complexes », *Rivière française de sociologie*, vol. 16, n°1, pp 3-32 ; in particular : M Crozier & E Friedberg (1977) *L'acteur et le système*, Le Seuil, pp 253-272.

8 Crozier , 1977, p 258, we translate.

9 Crozier , 1977, p 259.

What becomes then of the dream of public information and citizen participation through vertical electronic means ?

Consequences are quite disheartening. In such a system,

“... influence and initiative are concentrated in a few hands. The play is closed and secret, excluding constantly people from the political game. It works in shadows, public opinion frightens and leaders usually hide from it [...] The system is very centralized but not in the usual sense. Centralization here represents the enormous distance between people who decide and people affected by their decisions. Separation between those who conceive projects, those who are informed, those who execute and those who are affected, is a general rule. Information always comes through a third party. Deciders get only a weak and twisted knowledge. People who have fresh and complete information do not decide....”¹⁰

As such, the French regional system may appear oppressive and irrational. It does create actually important frustration [...] But if the system is oppressive and authoritarian, oppression is anonymous and authority impersonal [...] regulation is produced by a complex set of relationships and not by arbitrary decisions taken by a few persons [...] The system excludes people and creates privileges, but it distributes exclusions and privileges in such a balanced way that dissension does not exceed an acceptable level.”¹⁰

We have presented this detailed analysis, certainly not to propose the French regional organization as a model, but because it offers a fundamental challenge to e-planning. It is very likely that most regional organisations in developed countries are equally complicated, even if they offer different defects. The French structure described here may be considered, unfortunately, as a good and general example. Such complicated and subtly intricate system needs obviously to be reformed and, in particular, it wants a much more open and fluid circulation of information. The problem, however, cannot be solved by the simple introduction of a new technology, even if it is particularly powerful and swift. E-methods may contribute to change the system but only if they are much more ambitious and powerful than opening a simple e-mail network or posting a few maps on the web.

We have underlined the importance of horizontal communications between elected leaders and public technicians. They are still much more important between citizens but the topic is very tricky. E-methods, particularly through Internet, offer fantastic tools for developing horizontal contacts, but their very power is also a liability because it frightens official authorities, even in democratic countries.

One of the first modern systems of communication, extended to most western Europe, was created by the French Revolution and developed by Napoleon : the Chappe telegraph¹¹ was a network of towers built on hills with masts taking different positions which corresponded to a dictionary of messages. In each tower, a few guards observed through a spyglass the neighboring towers, read the messages and transmitted them with their mast. Torches were used at night. This is how, in 1809, Napoleon learned in two days of the sudden movements of the Austrian army some 1000 km away. But the towers guards were carefully chosen among deaf-mute people who would have much less possibility to sell their secrets : typically, vertical, hierarchical communication was too important to be open to horizontal channels.

Lucien Sfez¹² explains the backwardness of French telecommunications until the 1960's in a curious way, which bears directly upon our topic. Telephone was run, at the time, by a public administration which lacked means of investment. To build a dense telephone network, it was necessary to float bonds and therefore, to obtain the authorisation of the national Assembly. It was

¹⁰ Crozier , 1977, p 266-69.

¹¹ See, for instance : <http://bnrg.eecs.berkeley.edu/~randy/Courses/CS39C.S97/optical/optical.html>

¹² L Sfez (1988) *Critique de la communication*, PUF, Paris.

consistently refused until late 1960's. He shows that leaders of the Parliament, between 1920's and 1960's, were usually provincial notabilities, many being directors of small local newspapers. It seems they did not want to foster the use of the telephone which would have facilitated person to person communication of ideas when they could control, in their political activities and newspapers, the distribution of information. In other word, they did prefer a quite hierarchical information network easy to survey and to restrain, to horizontal and much more anarchical flows. It should not be surprising to observe that, to day, e-communication in planning has developed principally along vertical lines, from local administrations to citizens, and much less on a horizontal basis, between citizens.

The European Commission has tried and developed e-communication and e-planning since 1995¹³. The European project IMAGINE (Integrated Multimedia Applications Generating Innovative Networks in European digital towns) started in 1998 and is managed by the DGXIII Direction. Its goal was to show how electronic applications and services could contribute to develop middle-size towns and rural areas, particularly in the fields of education, public administration, citizen communication and job creation¹⁴. During three years, the project contributed to promote "local electronic communities" in four participating cities (Torgau and Weinstadt in Germany, Parthenay in France, Casale Monferrato in Italy). Several private sponsors collaborated to the project ((Siemens, France Telecom, Microsoft Europe, Finsiel...)). Universities also participated (Université Toulouse-le-Mirail, France ; the Departement of Geography, Universität Stuttgart ... Alain d'Iribarne, from the French CNRS, was in charge of scientific coordination).

The example of Parthenay is very instructive¹⁵. This small city (11 000 inhabitants) is proud to be located, like most middle-sized towns in France, "on the road of medieval pilgrims to Santiago de Compostella". It is the center of a quite prosperous agricultural region, close to the Atlantic coast. The previous mayor, Michel Hervé, a socialist, began in 1995, with much enthusiasm, to introduce electronic communication tools in his city. In 1996, Parthenay became one of the few cities included by the European Commission in the the "Digital Cities" program¹⁶. Hervé's project attracted a very wide interest, in Canada and in Germany¹⁷ for instance. The year 1997, when the project began, saw a large number of publications, all full of hope in new electronic technologies¹⁸.

The mayor's program, "Digital Town Experiment"¹⁹, built up until 2002 : all public buildings were connected through optic fibers and twelve "Digital Spaces" were opened to the public within the city, each one equipped with some 10 PCs. In each "space", people could find free Internet access, scanners, connection to data bases, cable TV and documentary videos.

The municipality negotiated discount rates for connecting private households with Internet through traditional telephone lines. In 2002, half the households in the small city were connected. The municipality took on the role of *provider*, considering it as a public service within the sphere of its responsibilities. All inhabitants got free access to Internet and use of e-mail. The Digital Experiment represented some 3% of the town budget.

13 See for examples : europe.eu.int/information_society/eeurope/2005/index_en.htm ; www.governments-online.org/articles/10.shtml ; www.villes-internet.net ; www.re-publique.net

14 We use here a communication from Patrick Schouller, INRIA, France (patrick.schouller@inria.fr)

15 See a good analysis of the experience in a french thesis : www.doc-iep.univ-Lyon2.fr/Ressources/Documents/Etudiants/Memoires/MFE2000/pasquerw/these_body.html ; See also in English : <http://www.ecole.org/2/EV060202.pdf> .

16 http://europe.eu.int/information_society/eeurope/2005/index_en.htm ; www.villes-internet.net ; www.governments-online.org/articles/10.shtml.

17 <http://www.zvw.de/aktuell/2001/03/21/parth.htm> ; <http://www..municipia.at>.

18 <http://www.globenet.org/vecam> ;

19 Cf www.district-parthenay.fr ; www.etw.org ;

Two services were provided : the “*InTowNet*” offered virtual shops for e-commerce, services for associations, access to the library catalog, help for creating new enterprises, etc.. *InTowNet* was proud of its more than 100 000 pages. A more official service, “*City Hall*”, offered software training (in 2000, some 3 700 individuals were learning Excel or Word in this way), information on sport and particularly, on the city architectural and historical resources in order to attract tourists. For instance, the provider offered a virtual exhibit on archaeology. The mayor insisted on the use of e-communication for education : all public schools were equipped with computers (1 for 4 children) and connected. Two chat forums allowed citizens to exchange directly messages, in a horizontal type of relationship.

Some effects, although favorable, were not expected : “In Parthenay, we are witnessing the multiplication of celebrations and street events. This tendency has increased since the citizens have been using the new tools of communication. In a sense, Internet has allowed for the creation of transversal links between associations and people, making it easier to meet and share interests or hobbies.”²⁰

The experience attracted much enthusiasm in France and elsewhere : Parthenay became famous in the whole world. But it did not convince most of those who were the first concerned : at the 2001 elections, Michel Hervé, who was mayor since 22 years, lost the election with only 34 % of the votes, a very bad score against 52 % for his rival. The new mayor, Xavier Argenton, a rightist lawyer who came to his town-hall two days a week and kept living and working in Paris, reduced the scope of the Internet project. The cost of the project was much criticized, although it was only 3% of the communal budget.

True, the national environment changed and made things more difficult. In 2002, the right won the majority in a new national Assembly and cancelled some measures taken by the preceding socialist government. A socialist program called “*emplois-jeunes*”, designed to fight unemployment, payed jobless teen-agers to execute socially useful tasks : Parthenay used several of them as monitors for its electronic communication system. With the cancellation of the project, the municipality lost a useful manpower paid, albeit sparingly, by the national budget.

Hervé's defeat was a shock for all those who were involved in municipal electronic new tools. Which were the reasons of such impressive defeat ? Michel Hervé indicates some good political reasons : the opposition of conservative groups, in a rural and catholic region, opposed to anything new ; another kind of opposition, muted but efficient, by the socialist party itself which found Hervé, although a party member and a representant to the Parliament, too liberal and too much “American oriented” : he made the big mistake of accepting the installation of a MacDonald restaurant and the participation of huge hypermarkets into the network, all criticisms typical of backward rural regions.

Other reasons for the project's failure seem, however, to run deeper. They are more closely linked to the e-communication tools. Young people, the more enthusiastic segment of the population, did not vote, either because they were under-age, or because they were too disgusted with politics, like in the rest of France. Hervé indicates also that some groups learned quickly how to master the new media (municipal officers, physicians,..) while other older people, although with diploma, were more reluctant, felt left behind and conceived some bitterness.

Some causes seem overwhelming. One is the events' calendar : costs, as well in money as in painful changes, were immediate while advantages could come and be observed only later. Alain d'Iribarne²¹ evokes a rebellion of intermediate social groups used to wield power in a close, rural society, who felt pushed aside. He shows also that Michel Hervé might have relied too much on 20 Michel Hervé, "Citizenship networks and communal memories in the wired city of Parthenay, France"

www.district-parthenay.fr

21 In an excellent discussion : <http://www.ecole.org/2/EV060202.pdf>.

electronic communication with citizens and have neglected old ceremonies, like going regularly to the city market to shake hands with citizens, to discuss with shopkeepers and to tap cows' hinds. In other words, electronic communication could hamper citizen participation, quite a disconcerting remark !

Another cause, probably the most important of all, is indicated by the new conservative municipality behavior : shortly after it took power, one citizen complained to a court of justice of "obscenities" in the forum messages. The new mayor seized the opportunity and closed immediately the two public forums where all citizens could exchange anonymous messages between each other. Horizontal communication was held for inappropriate and even dangerous. Exchanges became restricted to persons registered in the *InTowNet*, i.e to inhabitants of the city.

Young people and groups inclined to opposition, who are usually the same, complained bitterly of such limitation. One critic²² remarked quite justly that the fault laid with Michel Hervé himself, who had located the chat forums within the municipal Internet system, as if he wanted to keep still some control over them. Had the forums been consigned to private associations, municipal censorship would not have been possible : "In Parthenay, like in the other digital cities which are in trouble to-day, the *Digital City* has been a tool designed by the political society for the political society. Civil society [i.e in French jargon, the non-political part of the nation, that is everybody else] as well as economic society have never participated on an equal foot. Yesterday's opening was a king's decision, closing to-day is another king's decision. This is the heart of the problem."²³

Hence, a new capital question to e-planners : Which structure should best manage citizen forums ? Independent associations or municipalities ? In the second case, limitations or censorship of any kind remain always a possibility, even a probability. In the first case, however, e-planning would be limited to municipal communication, i.e to vertical information submitted by municipal authority and most probably limited to carefully chosen topics. All the talk about citizen participation would become largely void of meaning.

Dissatisfied people have created, in Parthenay, another site²⁴ called "The Other" to underline the difference. Here, people chat freely in a manner which a municipality, particularly a conservative and rural one, would not accept. For instance, to celebrate the International Day of Women, some people copied a purported anglo-saxon 1960 *Manual for the Married Woman* : "Remember your husband is master of your home and that, as such, he will always wield his authority with justice and honesty... When dinner is finished, pick up quickly the dishes and wash them. If your husband wants to help, do refuse because he would feel forced to repeat it other times : after a long day work, he does not need new tasks.... If your husband suggests making love, accept with humility, always remembering that a man's pleasure is more important than a woman's one. When he comes, a small groan of yours will encourage him and will suffice to indicate any form of pleasure you might have felt." Of course, the authenticity of such text is not attested and remains doubtful, at least in the 1960's. It might rather come from the 1860's. The important fact, however, is that it was published and praised on the independent forum, but would have posed quite a problem to municipal officers, had the official forum site been kept open to everybody.

Such example poses two deep questions to e-planners : should e-communication, which transcends space, be limited to some groups or be opened to anybody interested in participating, whatever his location ? And to which groups ? It seems there is a basic contradiction between a technology opening onto the world and the communication needs of a local authority. The second problem is as difficult as the first : by nature, communication on the Net is often anonymous. In contradiction to traditional media like the press or the TV, Internet allows people to hide behind

22 Olivier Zablocki in <http://www.uzine.net/article724.html>

23 Olivier Zablocki

24 www.citoyenne88.lautre.net

aliases. Can a municipality accept messages whose origin is ignored and whose target is not clearly defined ? This point requires much more discussion.

Does the Partyhenay example means there is no hope of furthering e-communication in a small community ? Certainly not. Two main questions must be answered : which institution should be responsible for managing and controlling the e-communication system ? Which should be its content and its public ? We will try and answer the second question further on.

As for the first, the best solution might be to split municipal communication in two parts : one would deal with administrative needs, explaining municipal decisions and policies, offering administrative files to fill up and reproducing the usual tasks of a city hall with much more elastic means. The other channel should certainly be independent from the municipality, although it might well be subsidized and technically helped by City Hall. It would serve in two main ways : offering a widely opened forum to anybody having questions, criticisms and remarks about town policies and local life, which would imply a moderator guarantying freedom of speech but avoiding too wide questions which would be foreign to local problems. More important still, it should contain a local "Observatory" offering on the Net carefully chosen data about municipal management which would allow everybody to build a sound opinion about the way municipal affairs are run. What could be the data gathered in this observatory ? We will come back on this topic, which seems capital.

Since they will exist anyway, municipal organisations should provide **power niches** where local officers, instead of trying and working as simple cogs in a supposedly well oiled machinery, an unrealistic conception unfortunately widely shared, would be left with undecided situations where they should make their own choices. Such local spheres of decision would create information at each level, and could feed the Observatory. Such solution would allow the coexistence of individual niches of freedom AND concentration of information. Of course, all this implies that Observatories are independent from the decision hierarchy and that the administrative chart is not too different from the actual distribution of responsibilities within the municipality : quite a task. But exposing necessary conditions for an effective use of e-communication and e-planning is not a useless, utopian exercise : it shows the complexity induced by modern tools and the conditions which must be met for an efficient local management. Like in so many other situations, electronic tools underline the defects of traditional organisations and make deep reforms much more urgent. This is one of the reasons for the resistance they meet so often and for the difficulty of developing e-planning. This is not the only one, however. We have tried and shown the complexity of administrative hierarchies which have usually very complex structures : messages sent up the hierarchy used to circulate between offices where responsibilities are, in fact, never clearly established.

2)- Territorial structures and the role of superposed levels of decision :

There is another source of difficulty in e-planning : the complexity of spatial organizations. The problem here is not administrative but geographical if not topological. Everywhere, public administration is structured in territories organized by partition and inclusion ; by partition because each piece of land is embedded, at a given level, in a unit and only one ; by inclusion meaning that any administrative cell is contained in a superior cell without any overlap. This hierarchical organization is typical of political systems all over the world and across history, because it is the best and actually the only way to let authority decisions flow fluently and without interference from top to bottom. In the same way, information flows easily up from the bottom, aggregating itself to other pieces of information of other cells as messages are synthetized for the upper levels of power. Obviously, in such a perfect

organization, messages and particularly the fast e-mails, should flow fluently until they reach the level where satisfactory answer can be given.

In the most famous, if not the more interesting geographical model of space organization²⁵, Walter Christaller has imagined a special structure following the « administrative » principle, that is maximizing political requirements. Christaller uses a coefficient k representing space fragmentation when one goes from an upper level to the immediately inferior one : in this case, $k=7$. Each theoretical region is divided into 7 districts, each one of them containing 7 municipalities, etc.. The high value of k shows, however, how inefficient is this kind of space organization since administrations, in charge of 7 inferior units, are kept quite far away from the public. Another Christaller model, maximizing accessibility (« transport principle ») organizes space with a $k=4$. Optimizing competition and economic efficiency produces a $k=3$ zones overlapping at different levels, by far the best way of locating human activities. Traditionnal administrative organization of space is badly inefficient and remains, from a topological viewpoint, radically different from the other kinds of organization²⁶. The reason is the need to insure a clear flow of order and information up and down the hierarchy. The other two patterns do not allow for such hierarchical embedding but for overlapping zones.

One should not be surprised, then, to observe that human settlements are organized spontaneously in complex overlapping zones without any respect for partition and inclusion. Assume one maps around a city different journey-to-work zones containing actual flows of daily migrants, and also accessibility zones represented by isochrones (identifying regions where one can travel from the city center in half an hour, one hour, etc.). Let us superpose maps of social neighborhoods representing blue collar workers, professionnals, etc.. and also maps of pollution with traces of industrial plumes, even maps of landscape types (plain, forests, river,..). We will get on paper an incredible net of overlapping zones which are organized neither by partition (some places may be outside many of the zones we described) nor by inclusion (two places suffering of the same pollution may be located in different municipalities). It is obvious, however, that they map authentically the environment and the way people live. If a citizen wants to inquire about jobs, discover where he can go in half an hour or to which authority he may complain about air pollution, where should he send his message ? The neat and mind-satisfying pyramids of administrative units just do not correspond to the different levels of everyday life : actual space is disordered at most hierarchical levels. The use of GIS could show evidently the incredible complication of every-day space. Unfortunately, many planners advocating the use of electronic mapping seem to shy away from such complicated representations, perhaps because it forces them to realize how involved is the topic and to acknowledge the difficulty of using electronic communication means.

Information Theory offers a most interesting way to measure order²⁷ in a system or in a geographical space. Without entering in technical details which would be beside the point²⁸, let us remember that it is possible to build a vertical graph showing how **order** flows from one level to the next one. Let us consider a big agglomeration divided in 2 cities containing themselves 2 different districts, each divided in 2 quarters, and so on. Assume its population is made of two different groups

25 W Christaller (1966) *Central Places in Southern Germany*, Prentice-Hall ; B J Berry (1967) *Geography of Market Centers and Retail Distribution*, Prentice-Hall.

26 B Marchand (1973) "An Introduction to the topological Analysis of Geographical Spaces: The Topology of Central Place Theory", *Geographical Analysis*.

27 It should be clear that the word « order » used here is purely technical and does not convey any laudative or pejorative connotation nor any moral or political meaning. See Marchand B (2011) *Measuring Order in an Urban Hierarchy*, <http://halshs.archives-ouvertes.fr/>

28 C E Shannon & N Weaver (1949) *The Mathematical Theory of Communication*, Urbana, Univ of Illinois P. ; H von Foerster (Ed.) *Interpersonal relational Networks*, CIDOC, 1014, Cuernavaca ; see also : N Georgescu-Roegen (1971) *The Entropy Law and the Economic Process*, Harvard University Press, Cambridge, MA ; S Goldman (1953) *Information Theory*, Dover, New-York.

(Blacks vs Whites, Richs vs Poors, A vs B,...) with equal numbers of citizens. We can imagine two opposite spatial distributions : in the first one, say X, one city is purely A, the other purely B. In a second case Y, from the 8 quarters, 4 are A, 4 are B but they are located randomly.

Order in a spatial hierarchy

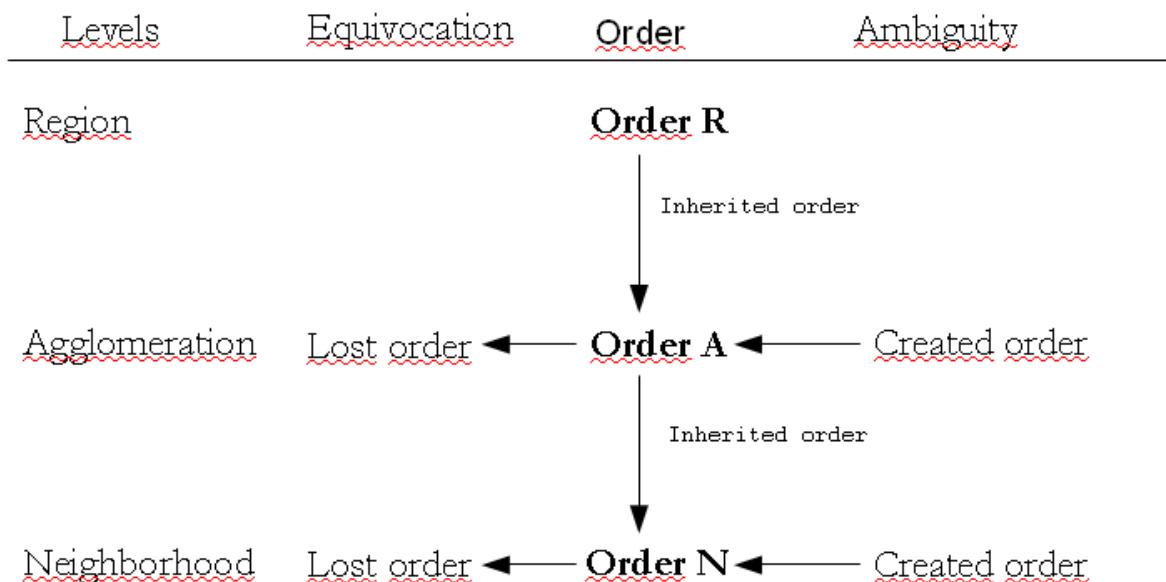


Fig. 1

Obviously, although the number of A and B citizens in X and Y is the same, their spatial distribution and their relationships will be very different. In X, space will be very « ordered » at the region level, but very homogeneous, i. e « disordered » (in the Information Theory sense, meaning that it does not convey any inner information) at the quarter level : if I know I am in city A, learning that such quarter is of the A type does not bring me any new information since all quarters are A ; order at the agglomeration level has percolated down and organized lower levels.

In the second case Y, however, knowing in which city I am located will not give me any *a priori* knowledge, since quarters may be A or B with equal probabilities. If I learn that a particular quarter is B, I get an important element of information, equal to my lack of knowledge before I received the message.

We may, in this way, build graphs showing how order (or *information*, in the jargon) flows down the different hierarchical levels, with a part of order lost from a level to another (called *equivocation*) and a part of new order appearing at this particular level (fig 1). Effects on our topic are most important : planning can be seen as a way not only of solving social or economic problems at one level but, very often, of shifting the problem from a level to another where it will be easier to solve or, at least, less obvious and not so dangerous.

The « bussing controversy » which did upset American society and caused violence and deaths in the 1960-1970's can be viewed in this way. The basic problem was the division of urban space in american cities into black and white communities with separated schools of different qualities. The Supreme Court, when it ordered the bussing of children, tried to shift the tension and the inequality

from the neighborhood level, which were very homogeneous (Black or White) and where it could not enforce ethnic mixture, to the city level, where it hopped for a better homogeneity. It was actually equivalent to shifting spatial « order » which was very strong at the neighborhood scale to a higher level of spatial hierarchy.

Consequences on planning, and e-planning, are important : a planner should always be conscious of the spatial order where he is trying to work, of the tensions at each hierarchical level and of their effects on organizing space at lower levels. If we define planning at large as « shifting tensions from a level to another in a hierarchical structure », electronic tools would help by building graphs showing the distribution of tensions (i.e, the flow of order) up and down the administrative hierarchy for different variables : ethnic relationships, social tensions, land price structure, etc..

All this implies, however, a vertical hierarchy organized by partition and inclusion, which explains why all systems of power have tried and built such structures : it was the only way they could, if not measure quantitatively, at least evaluate qualitatively the evolution of order within the space they wanted to manage and to control. Planners could hope to forecast the effect on lower levels of actions taken on upper levels. The assumption is strong and useful, but what happens if it is not met ? If space, instead of being organized in a regular way, is split like the different everyday spaces we described above ? Then, we can still evaluate order at each level, but we cannot anymore compute the quantity of order flowing from a level to another, in other words, we do not know anymore what exact influence a certain organization at a given level may have or not have on the way the next level is organized. Then, we do not know how to shift order from a level to another or, in a more traditional language, we cannot correlate anymore phenomena happening at a level with those at another one.

Assume that, in a huge agglomeration, we have drawn up a map of accessibility to the center and another map showing residences of different social groups. A municipality can change accessibility, for instance through investments in public transportation systems. A planner might hope to act indirectly, through this tool, on social segregation. But what are the relationships between the two variables ? We cannot evaluate them because the two variables are not organized in a true hierarchical structure or, in other words, because they are not measured at the same places. Usually, planners will make hypotheses to turn around the obstacle. They will assume they can interpolate a certain measure of accessibility within each ethnic neighborhood for instance, a trick which recreates artificially two maps related by partition and inclusion. In other words, they will intersect the two overlapping maps and work on the new cells which are, now, organized by partition and inclusion. But then, a whole process of interpolation is implied which may, in some cases, be legitimate, but often is not. The planner is forced to assume much more than he knows, with quite dubious results.

In this way, the power of electronic tools to compute and exhibit relationships is dangerously hampered by the complexity of actual spatial organization. E-communications are made more difficult to the point of breaking often down : how could a man complain of a disagreeable pollution along the road he is following in his journey-to-work ? Should he send messages to his commune of residence ? To the place where he works ? To the administration managing the road ? To the different private companies emitting pollution plumes ? An obvious solution would be, in such case, to create a new administration in charge of this combination of variables : an Office of Clean Air with responsibility extended over different communes, a complex road network and with some authority to control private enterprises. This is exactly what governments keep doing, running the risk to be accused of multiplying bureaucracies, a move, actually, which tends only to re-create a hierarchy organized by partition and inclusion.

Similar effects can also be found in the planning processes of private enterprises, transformed and complicated by the introduction of e-methods. Let us take a famous example : the Italian industrial districts²⁹ (*Distretti Industriali* : DI). They represent one of the most original forms of production in industrialized countries: a group of small family enterprises within a densely populated rural landscape, produce textile, panty-hoses, furniture or mechanical goods. Their production has increased at an Asiatic rate : 7, 8 even 10 % a year. Bagnasco, in a famous book³⁰, identified three Italies : the north-western regions with big industrial companies (Piedmont, Lombardy), the MezzoGiorno with wide latifundias, low income, rural exodus and the power of mafias, and finally the "third Italy", the regions of the Districts mainly in the north-east (Veneto, Frioul), in Emilia-Romagna, but also in the center (Toscana, Umbria), developing faster than most other regions in Europe³¹.

The main originality of DIs is their organisation around local networks of personal communication systems which ensure their flexibility and their efficiency. Introduction of new communication networks using electronic devices may well disrupt the local social and production system. The Districts have been able, up to now, to accommodate, in their peculiar way, which is the main problem of modern economy. Production is distributed among small economic units, often families. Cohesion is assured by personal ties, friendship and a common system of values. In the first years, information did flow through heated discussions around a bottle of *grappa*, the local brandy. Today, electronic means (telephone, fax, e-mail, web) are increasingly used, with important consequences : distances are increasing rapidly and personal contacts are much weakened.

Fluent communication is the key to success since the production process is extremely decentralized and built to react quickly to demand. Making tee-shirts, for instance, to answer an order coming from abroad, involves the distribution between a large number of families of cloth, the choice of designs, the establishment of a strict time schedule, the division of the production process between printing, dying, cutting, checking the quality, packaging, etc., all functions trusted to a large number of different units, from individuals to some integrated companies.

For all its virtues, the system, however, is fragile. Development of information technology within enterprises (data base management, Intranet...) or between them (Internet) as well as growing competition through European unification and globalization, increase the need for modernisation and, while creating a "New Economy", weakens local personal networks. Industrial districts cannot ignore the very rapid progress of Information Technology ; on the other hand, they might be destroyed by such developments.

For Conti³², an *Industrial District* integrates two different networks, each one corresponding to a type of knowledge : a hierarchical network where territorial links play practically no role, and a cooperative one built on local informal relationships based on personal contacts within a narrow area. Combination of these two networks of different kinds ensures the robustness of the system when exposed to competition.

29 Marchand B (2011) *The Italian Industrial Districts and the rôle of Information Technology*, <http://halshs.archives-ouvertes.fr/>.

30 Bagnasco A (1977) *Tre Italie, la problematica territoriale dello sviluppo italiano*, Il Mulino, Bologna.

31 Becattini G (1998) *Distretti industriali e made-in-Italy*, Bollati Boringhieri, Torino ; Bellandi M & M Russo (1994) (Eds) *Distretto industriale e cambiamento economico locale*, Rosenberg & Sellier, Torino ; Casavecchia M (2000) *E-Work, il lavoro al tempo della rete*, Rapporto CARLA, SITECH, Parco Tecnologico dell'Umbria ; Pyke F, Becattini G & W Sengerberger (1990) *Industrial Districts and Inter-Firm Co-Operation in Italy*, Genève, International Institute for Labor Studies ; Storper M & R Walker (1989) *The capitalist Imperative : Territory, Technology and industrial Growth*, Basil Blackwell, Oxford.

Web site : <http://www.clubdistretti.it>.

32 In IRIS, *Il distretto industriale e l'interpretazione dello sviluppo locale*, Incontri pratesi su lo sviluppo locale, villa Medicea di Artimino, 9-13 settembre 1996.

The originality of DIs is due mainly to the second type of knowledge transmitted within groups of friends or families, with children working as apprentices. Such transmission modes, however, are today in question. On one hand, the rapid development of transportation means and, more important still, of electronic communications distends personal networks, swells the limits of the Districts and generates new forms of competition : relationships are not contained within the Districts any more. On the other hand, transmitting knowledge from a generation to the next one is not an easy and harmonious process : rural workers who created the *Districts* in the 1960/70s sent their children to university. These came back with diplomas, formal knowledge, particularly of e-tools, and quite different ideas. Meanwhile, farmers who became successful managers kept their patriarchal mentality : they remained "padre/padrone" and wanted to manage their firm until their death. In this way, revolution in information technology has been compounded by generation conflicts.

DIs produce mainly semi-finite products and are less open to competition on the consumer market, but relationships with suppliers are crucial. They are usually quite stable, but the development of new methods like *just-in-time* are changing their policies and give more importance to logistics : e-communication is becoming rapidly crucial and establishing itself as the main tool for business planning.

Innovation happens mainly in the biggest and leading enterprises, increasing thus the probability of concentration which is likely to alter the DIs very decentralized structure : leading enterprises down the production process are the most likely to constitute the nodes around which small firms and individual producers will cluster. E-planning requires compatibility of data formats to insure a steady flow of orders and information. Even if they do not want it, companies which organize production will tend to impose their software, their formats and their methods. In this way, e-planning is becoming a powerful incentive for concentration, changing rapidly the very structure of Dis.

Computer companies will play also an increasing role in DIs by selling, installing and maintaining computer systems and software for e-communication, or as Web agencies. Bigger electronic companies are increasingly interested by this new developing market : FINSIEL, a subsidiary company from Telecom Italia, is a software company with 8 000 employees. It began to cater to the needs of very different DIs and will most probably sell them the same software. Districts might then lose a large part of their closed structure. Software companies need wide client areas when developing e-planning with private producers. Their action will necessarily contradict the strict attachment of firms to a narrow production District.

Computer development is likely to shorten production chains through firms concentration. It might also weaken and even destroy the compactness of a DI, its main characteristic and principal asset. "Introducing the computer is not only a quantitative change, but rather a qualitative one : to spread widely information through the production system will put in full light the less efficient parts of the chain, producers or distributors who deduct a part of the added value which does not correspond to their efficiency."³³

A last example of the power and the dangers of e-planning in private enterprises is given by the commercial use of Internet. A few years ago, the possibility for a small firm to put its catalog on the Net and to offer its products for sale all over the globe seemed a dream come true : people spoke of "building windows on the world". Results, however, have been often disappointing, for a simple reason : to offer products is not enough. A firm should be able to satisfy quickly the demand and to ship its products efficiently to the customer. This implies a powerful and swift production structure and a very developed logistic, usually the weakest part of small enterprises. Many of the firms which went on the

33 Bernard Maitre, PDG Galileo Partners, *Informatiques*, Numéro spécial, 3 mars 2000, p 10.

Net within Italian Industrial Districts have discovered that B-to-C (Business to Consumer communication) could have disastrous consequences. After publishing their catalogs, they became quickly flooded by orders which they just could not satisfy and with logistic demands which were above their means. They lost quickly their new consumers and also their reputation. Actually, e-planning seems to work well at a higher level, between quite important firms buying and selling equipment : this B-to-B (Business to Business) communication system increases competition and lowers costs, but it is beyond the scope of this paper.

We have tried and shown some of the difficulties and even the dangers of using electronic methods in public and private planning, not because e-planning is not useful but, on the contrary, in order to insist upon the power and the far-reaching efficiency of e-methods. Computers are no Xerox machines we can leave in a corridor for everybody to employ. They are so powerful that to use them efficiently requires a complete change in our methods, changes in data, changes in the goals we try to reach. This is why e-planning is at the same time so fascinating and so difficult a topic : it requires such drastic modifications that computers usually are carefully limited to traditional and limited tasks where they will not change the power structure, hurt customs or modify procedures. Using GIS to exhibit a few maps will not change the way planners work, but on the other hand, it will use only a small and limited fraction of what the computer could do.

3)- Which tools for e-planning ?

How could electronic tools and methods contribute to planning ? Let us try and review some useful applications.

3.1 – Vertical communication and e-planning :

Most specialists quote at length e-methods used vertically upward : citizens asking questions, requiring application files or consulting multimedia documents. Downloading official forms and sending them back after filling them up constitutes probably the most developed and most straightforward segment of e-planning. In spite of the difficulties in navigating up a hierarchy, which have been explained before, getting to the necessary forms is usually easy because the local authority itself prepares the documents and is interested in communicating them easily to the public.

Getting information on a municipality is also easy as long as one is satisfied with the limited choice of documents offered on a Web site : typically, photos of the mayor to get votes, indications about historical heritage in order to attract tourists, list of hotels and restaurants to help them to spend their money, sometimes indications on the attractive characteristics of the locality for would-be investors. GIS are often used but only to put a few location maps on the screen. Local institutions control entirely the documents exhibited and limit usually their number and their interest.

Several, but not all by far, electronic sites offer to citizens the possibility to ask questions to their local authorities. This is a much more interesting aspect of e-planning but experience shows that usually, after a much advertised start, it does not work and the possibility offered is rapidly closed. One obvious reason, like in Parthenay, is that many elected officials do not want to exhibit too freely the reasons of their decisions, not that they are necessarily unjustified or unfair, but because it might involve discrete negotiations or complex reasons. In democratic institutions, most decisions result from compromises not always easy to explain. Some simulation software, presented a bit later, might play a very pedagogic role.

Another reason for exchange failures is the sheer number of messages rapidly flooding elected officials mailboxes : many are meaningless ; to answer all of them would consume most of the time of a normal man. But not answering citizen queries is much worst than the lack of electronic communication system : citizens believe they are despised and, as several experiences show, become very dissatisfied with their administration. Offering an e-mail system is usually, for a municipality, quite suicidal although some have managed to survive and to prosper³⁴.

There might be solutions, however : one may imagine **filtering software** which would parse messages, counting, for instance, words frequencies and replace a large number of similar queries by some sort of synthetic message to which a councilor could easily reply. The software could then send back the reply to a large number of addresses. Although such kind of application does not seem to have been written yet, it is certainly not beyond actual programming abilities. It might change deeply the way local authorities and citizens relate.

Another promising approach could be found in **neural networks**. Virtual software networks try and simulate the way brain neurons work by answering certain stimulus and exciting or not exciting other neighboring neurons. Applications involve usually two layers of neurons, one for the input, the other for the output, but a third "hidden" layer of intermediary neurons adds much memory capabilities to the software. The problem is to calibrate relationships between neurons in a preliminary stage³⁵, the "learning phase" : several algorithms have been devised. Such networks are widely used today in banks or insurance companies to recognize patterns and identify types of customers : the company is then able to sort clients and to identify easily files where decision is obvious, either to accept the case, or to refuse it. Only problematic cases are submitted to committee specialists who do not lose their time with clear-cut, obvious situations. Neural Networks would be very useful in identifying latent structures within sets of public queries. They would allow building FAQ³⁶ lists and also answering more specific groups of questions.

Explaining municipal **negotiations** is another important field where e-communication would be most useful. Decisions are usually obtained through bargaining between different political groups. This is a very normal, almost necessary process in a democratic structure but it is often misunderstood. Negotiators may be accused of forgetting their promises, even of treason. The best solution would be to explain clearly the terms of the bargain and a computer simulation would be very convincing.

Municipal counsellors should start with a table showing the set of projects they have discussed and their preferences. To put things more precisely, assume a table of 5 lines representing 5 voting counsellors or 5 lobbies (e.g, land owners, entrepreneurs, workers unions, ecologists, etc). Each column would represent a particular project : building a new sport center, creating an underground parking lot, expanding the elementary school, etc.. Each lobby would indicate his attitude toward each project by a figure between -10 (completely opposed) and +10 (enthusiastic for the project). Another column, outside the table would show the power of each voter (either the number of seats of a party in a municipal council, or the weight of a lobby). Putting the table on the Net for everybody to see would already have a huge impact : citizens could know clearly who wants what, not a small progress.

34 In the *Iperbole* network in Bologna, Italy, the town hall uses a system for managing incoming e-mail. Citizens can write to any department on the Web interface. Thanks to an intelligent message "switchboard", the user no longer needs to know to whom the message must be addressed. It suffices to write one's request for information, documents, or whatever, and technology takes over the complexity of the system, sending the request directly to the appropriate department.

35 S Fausett, L (1994)- *Fundamentals of Neural Networks*, Prentice-Hall ; Kosko, B (1992), *Neural Networks and Fuzzy Systems*, Prentice-Hall.

36 *Frequently Asked Questions*, a basic feature of many websites.

More important still, they could know which projects have been discarded. This is, in fact, a capital point in planning. No institution is rich enough to fund all proposals. Accepting one project means rejecting another one of similar cost. Showing clearly preferences and listing projects which have been refused, should be the rule in a truly democratic institution. Publishing the project table on the Net would clarify choices in an unprecedented way. But it is possible to do much better and to justify choices.

On one hand, *decision theory*, a classical field of research, indicates several methods to find the "best" possible choice in the table indicated above, using, for instance, the MiniMax theorem.³⁷ Another more intuitive approach, based not on matrix calculus but on a heuristic, could offer to citizens a view of the bargain process much easier to understand and to reproduce. Let us present a small application developed along these lines³⁸. The basic heuristic assumes that two persons will negotiate if and only if both profit from the transaction. For instance, assume that X wants dearly a new public library and put in the table a high positive value (+10) but does not care about expending the public market (-3). On the other hand, Y attaches a high value to the new market place (+9) and is quite indifferent to the library (-1). Obviously, their common interest is to make an alliance : "*forget your reserves, vote for my project and I will do the same and vote for yours*". Coalition of several persons may be built in this way. The problem, however, is the astronomic number of possible solutions : with 8 lobbies and 10 projects, a quite banal configuration, there will be 21^{80} potential combinations. It is impossible to identify all of them and chose the best. Hence, we must use a heuristic to find "local optimums", i.e solutions which might not be the best one but good enough in a reasonable time.

Problem is compounded by the order of negotiation. If two persons reach a bargain, then they might not be available anymore for a new negotiation which might have given better global results, a general problem with solutions based on heuristics. The software quoted here chooses randomly two persons and a project as a starting position, runs all possible bargains from there and then starts again from another random position. One can reasonably hope, in this way, to have considered a sufficiently large number of available solutions. The power of the computer shows itself in its ability to repeat swiftly and efficiently the process : a Pentium 4 turning at 2.7 Mhz evaluates typically between 20 000 and 50 000 possible bargains in a few seconds and keeps the « best » ones in memory.

Identifying the « best » solution is, in itself, a pedagogic process : this application prints three solutions, usually quite different, leaving to the user the responsibility to chose among them. The first one follows the classical rule of majority : the party with the largest number of seats wins the day, but bargains remain useful when it does not have a crushing majority. A second solution preserves somehow the right of minorities by keeping them carefully within the bargaining process. A third one attaches a particular attention to convinced choices : it assumes that people who expressed strong opposition (e.g -9) or real enthusiasm (+10) for a project should have more say than parties which do not care and put -1 or +2. The software prints the three solutions : it is up to the user to make his choice. If it were put on the Net, citizens could understand how and why concellors have changed their mind in the bargaining process and could appreciate their reasons. They would also have the opportunity to run the software themselves and experience different solutions, in a true experiment of local democracy.

Yet another approach could use a rapidly developing field : *cellular automata*. An automaton is a virtual object in the computer memory, endowed with different characteristics and behavior rules. When the computer runs, automata take on a life of their own and behave according to the rules which

37 See, for instance a classical text : R D Luce & H Raiffa (1985) *Games and Decisions*, Dover ; see also D Fudenberg & J Tirole (1995) *Game Theory*, MIT.

38 B. Marchand (1997) "Simulating Negotiation on the Computer", *Computers, Environment and Urban Systems*, Vol 20, N°1. The application, written and compiled in DELPHI, working on all Windows platforms, can be downloaded at <http://www-obp.univ-paris1.fr>.

have been defined for them. Some geographers have used automata to simulate the evolution of land prices : price on a piece of land, say a square on the map, is defined as function of prices on contiguous land cells. If the user locates a new amenity, say a park, land prices go up and then, all the automata react one after the other until the end of the map. A much better use would be to simulate the behavior of households entering a city and looking for job and housing. Each household could be defined by its size and its social level and would have some rules for getting employed (to look for a job corresponding to the household's members capacities, maximizing income and minimizing transportation time, for instance) and for finding housing. Then the software could built maps of the town, with the location of social groups, prices on the housing market, etc.. as they would result from the common efforts of automata. Cellular Automata offer the possibility to deal not, as usual, with means and variances averaged over groups of persons, that is, collective data, but with a large number of individuals units whose behavior has been determined, but not the global consequences of such aggregate behavior, which remain largely unpredictable.

A first attempt at writing such a simulation software is under way.³⁹ Offered for download on a municipal website, it could become a useful pedagogic tool for citizens. It shows, for instance, how families have trouble to find a flat while many housing units remain vacant, a well-known phenomenon usually misunderstood. In the same model, a small sample is taken randomly among some ten thousands households : it is then possible to show individual histories, how individual families have managed to get a job and a place to live, how much taxes they pay, etc.. This last point is important : in the 1970's, the French government reformed local taxes. Simulations run by the Ministry of Finances were made to evaluate the cost for different social groups : it was deemed acceptable. Strong protestations emerged, however, during the following year, because taxes, in some individual cases, had increased enormously. Dealing with averages had missed individual situations.

Up to now, we have considered vertical flows of information going down from a public authority to citizens, by far the most common type of e-communication in local planning. Queries going upward from concerned citizens trying to question a decision or to evaluate the quality of a municipal management are probably more important but not easily answered. It is usually difficult to know where to get important data, still more difficult for non-specialists to bring out the meaning of figures or of legal texts. It would be most useful for urban planners to establish nationwide a table indicating which municipal data are needed to make a sound judgement, and to add clear explanations of their meanings and the way to reach conclusions. Such document, discussed and sponsored by the planning community, would be proposed to municipalities as a *good-practice framework*. It should contain data on finances and local economy, but also social values (unemployment, security, ..), cultural life, environmental quality, etc.. Municipality which would accept it would get a label showing for all to see that they are truthfull, concerned, and strive hard to give their citizens the tools necessary for a honest evaluation. Such framework would fit particularly well on web sites and set a standard of transparency which would constitute a strong basis for e-communication. If it were accepted as a standard, it would allow comparisons in the way municipalities are run.

The best way to offer useful data to citizens without involving the responsibility and the meddlesomeness of a municipality would be the creation of an independent **Observatory** managed, for instance, by an association. The city should contribute by offering statistics, maps and some funding but could not censure the information and would not be responsible for its diffusion. Advertising the use of the *Good-Practice framework* indicated above would give the observatory a sound credibility . Democratic control of elected officials, one of the citizens' main duty, would thus be feasible.

39 B Marchand (2003), project *P-City*.

3.2 – Horizontal communication and citizens participation :

Electronic means of communication have recently offered impressive examples of their power : explosion of criticisms against the Chinese government through Internet, swelling popularity of Barack Obama during the last campaign for the US presidency through e-mail campaigning and grass-roots militancy, street demonstrations against the Aznar government in Madrid, organized in a few hours with the use of e-mails and cellular phones, show that citizen participation looks like an old dream come true.

But limits have appeared quickly : Chinese Internet is now closely controlled and Madrid demonstrations have been strong, efficient but limited to a few hours. On a long term, one may doubt of the feasibility of direct democracy using forums on public Web sites. At the national level, stakes seem too remote to generate meaningful discussions : either people would not be interested enough, or the forums might be flooded with too many passionate communications touching any possible topic. Direct democracy should certainly work better at the local level but three obstacles appear, as the Parthenay example has clearly shown. One is the danger of seeing a municipality monitor and even try and control opinions expressed when in disagreement with them. The second is that such municipality could justify quite rightly its control by its moral and legal responsibility while running the municipal site. Third, it would be difficult to give access to the forum to everybody and equally objectionable to limit access to residents only.

The best solution might be to let an association organize a forum, with some help and some involvement from the municipality which should, however, remain outside the game. In this way, Internet forums for concerned citizens could be multiplied without much obstacles. Here again, new software are presently designed and distributed which may have a strong effect on direct democracy : in France, for instance, open source programmers have created interesting sites from where new efficient tools can be downloaded⁴⁰. For instance, so-called "thread rss" allow one, after taking a subscription, to be kept regularly abreast of interesting websites without actually visiting them⁴¹.

Another possible way of consulting public opinion is electronic sampling : in France, the famous newspaper *Le Monde* organizes regularly with the help of a private company, a site⁴² where citizens may answer surveys on political and social problems and then, when the sample is big enough, read the results which are also communicated for comments to important specialists : a member of the government or a famous researcher. If the concept is interesting, it is also much open to criticisms : samples built in this way are necessarily biased. They are not clearly representative. Published in *Le Monde*, for instance, they concern only readers of the journal, i.e, intellectuals, professionals and upper-class bourgeois. Even in this group, only those who care for answering, that is people who are strongly motivated by their enthusiasm or their outrage. Here again, e-communication, although fascinating, must be used with much caution.

Conclusion :

Quite naturally, e-planning has raised up great expectations. One may wonder if they have been met to-day. This is not to say e-planning is a lure. On the contrary, we have tried and shown the reverse, that e-tools and e-methods are so powerful that they could change in depth the way planning

40 See, for instance, the developpment of « wiki » messages : <http://igenerator.nt> ; <http://autrans.crao.net> ; www.theweblogreview.com

41 The user reads only updatings on sorted information. A specialist can follow permanently hundreds of sites without spending too much time on websurfing. See www.rssjobs.com.

42 [Http://www.expression-publique.com](http://www.expression-publique.com)

works. But it would require much more than just opening some e-mail boxes, downloading administrative files or putting maps on the net.

Publication on Internet has too far reaching consequences for a municipality to use it blindly. In many circumstances, particularly in the most important and controversial uses, it would be much better for everybody to let an association, distinct from the municipality, run the site. For the same reasons, an independent Observatory offering data on local economy and local society, presented in a standard framework recommended by independent and unbiased specialists, would obviously be much more trusted and more useful than a municipal site. Electronic means could increase considerably the ability of citizens to control public authorities and particularly, for the local ones, their planning activities. That would require better access to data and better understanding of planning processes. In these directions, everything remains to be done. Possibilities are enormous but they can be realized only if planners become seriously interested in computer programming.

Software for the newest planning tasks are not yet available and it remains doubtful if they will ever be written by private software companies. Most require more understanding of planning than ability in computer science. GIS software offers a good example. It is made of two modules : the mapping module is usually an excellent piece of machine code already written by programmers. All the planning technician has to do is to learn, in a few hours or a few days, the query language. The second module, however, is the data base ; it depends completely on the planner's knowledge : which variables to chose, at which scale, which topological structure to define, which use for the GIS, which kind of spatial analysis, how to plan the maintenance, etc ? Experience shows that, unfortunately, this is usually the forgotten side. When a municipality wants to buy a GIS, it considers too often the cost of the hardware and the software, forgetting that gathering data and building the data base represents some 80 % of the total cost.

This is all the more regrettable that programming has made in the last fifteen years enormous progress. Before, in order to open a window or to draw a graph, one had to use Windows API, which were complicated and very cumbersome. Nowadays, software firms like Borland (Delphi, Jbuilder, C+ + Builder, Kylix), WinDev and even Microsoft (Visual Basic) have developed RAD languages (Rapid Application Development) where several API statements are encapsulated in one instruction. For instance, while it was necessary to write half a page of code in Windows just to save a file, one Delphi statement (*SaveToFile*) does the job. Programming has followed the path of automobile driving : in the 1890s, one needed, to travel in a car, a mechanician who spent a long time under the hood. Today, people can drive without knowing anything about spark-plugs or camshaft. Planners nowadays can easily get better acquainted with the use of the computer.

Technical or even scientific questions are not, however, the worst concerns. Communication is probably the most fascinating aspect of e-planning. It implies however, several hypotheses which should not be left in the dark but should be discussed for their importance. Let us underline some of them :

First hypothesis : *interests are coherent and the same up and down the hierarchy ; they need only to be explained and coordinated.* What if interests are different or opposed according to the level they are considered ? The famous NIMBY⁴³ attitude is widespread not only between social groups but even within the same person. A man living in Paris just in front of the site where the new Opera was built, complained, in a survey, of the disorder introduced in the surrounding streets, was very satisfied that Paris got such a new landmark but deplored that public money was invested in the wealthy capital instead of going to poorer parts of France. Usually, interests are not coherent in a hierarchy of embedded territories. We have shown that the situation is still much more complex with overlapping

43 *Not in my back-yard* : people want a new highway but refuse to have it passing through their property or behind their house.

levels. So, is it possible to hope for coherence all over the hierarchy ? If not, vertical communication should try and explain to dissatisfied citizens the unseen reasons for a certain policy. But then, would not it tend to impose upper interests on lower levels and increase control by developing only certain arguments ? Might not e-communication become e-propaganda ?

Second hypothesis : *local interests and planning policies are rational and can be explained in ways which will convince most citizens.* But is not planning dealing too often with traditions or myths which are difficult to justify rationally ? Consider, for instance, the myth of Nature developed so strongly by ecologists all over the western world. Last year, marine erosion destroyed a part of the famous white cliffs of chalk which dominate the Channel. French municipalities demanded loudly that the State protect the cliff feet with concrete in order to preserve "Nature" ; the topic got much approval on municipal sites. But then what is "nature" and where is rationality ? There is, in most countries, a basic opposition of interests and of opinion between big cities and the rest of a country. Such opposition has not been widely documented. It is of paramount importance, however (See <http://www-ohp.univ-paris-1.fr>)

Third hypothesis : *Values are supposed to be common among private and public planners, as well as among citizens and workers for whom planning is practiced.* What if there are strong divergences of values ? For instance, should forests be saved for citizens' leisure or exploited for wood production ? Both policies are justifiable. Should they be decided by public opinion, which might be carried by passion and prejudices ? Is a largely blind and anonymous electronic communication network the best place to decide ?

Communication, however, remains the main hope of e-planning. It has been advocated with enthusiasm largely because it seemed to open the way to direct democracy. At a time when traditional democratic regimes in the West are in question, when so many political leaders are accused of losing contact with their electors, of lying to them and standing aloof in their golden palaces, to offer to citizens the possibility to communicate directly with their leaders, to control them regularly and to force them to take their complaints into account seemed the realization of an old utopia. Although this is not the case yet, computer tools might help in the future to advance such project, at least at the local level. This is a fascinating aspect of e-planning.

At the same time, planners and citizens should be very cautious and think twice before jumping into the delights of direct democracy. There is a first limit : it is almost impossible to have complete trust in any control institution which has been given also the power to take decisions. Executive authority and objective control should be separated. Direct democracy implies indirect institutions, like the "observatories" indicated above, which would be responsible for offering unbiased information and evaluations. Jean-Jacques Rousseau, the most famous and talented advocate of direct democracy, dreamed of the way Swiss cantons were run. But they were very small pieces of land where everybody knew everybody and where tradition and conservative feelings have always been very strong. Refusing women the right to vote until late after the Second World War was an effect of direct votes but does not appear as a convincing example of democracy. It seems Rousseau's direct democracy was actually a way to criticize big cities : he has been one of the main enemies of Paris and London⁴⁴.

Direct and immediate citizens participation to public policy is only a part of democracy and might open the way to demagoguery. Democracy is based on two foundations : personal free vote, but also balance of power. Direct democracy seems to foster the first one but endangers the second one. Of course, electronic methods and tools are not the culprit but the way they might be used. The way television is run today could give a sobering example. Much more reflection and caution are certainly advisable.

44 Marchand B (2009) *Les ennemis de Paris*, Presses Universitaires de Rennes, 397 p. More details and various opinions on the subject in <http://www-ohp.univ-paris1.fr>