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DISCUSSION PAPER

Smart Communities and the Geo-Governance of Social Learning

Gilles Paquet

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Smart Communities and the Geo-Governance of Social Learning

Gilles Paquet
Centre on Governance
University of Ottawa
www.governance.uottawa.ca

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Notes for an address to the symposium on the Governance of Smart Communities that was held in Ottawa on December 5, 2000. The assistance of Anne Burgess and Danna Campbell is gratefully acknowledged.
“We need to shift away
from the notion of technology
managing information and
toward the idea of technology
as a medium of relationships”

Michael Schrage

Introduction

A smart community is one that learns fast and well. Learning makes the highest and best use of all the community’s intelligence and resources (intellectual, social, physical, financial, personal, etc.) through the use of all the available physical, social, and behavioral technologies, including the new information and communication technologies (NICT). One must guard against the temptation on the part of the technologically-inclined to ascribe the “smartness” of communities to the presence of NICTs. Given the wide range of factors contributing to the success of a smart community, it is unwise to reduce “smartness” to sheer connectedness or to a problem of wiring.

A smart community is first and foremost a community – i.e., a fuzzy geo-political entity that has assets, skills, capabilities, but also a soul, a collective intelligence, and a capacity to transform (i.e., to learn) – because learning is changing. The fact that, in order to transform, it may use NICTs extensively is not inconsequential, but it remains a subsidiary phenomenon. A smart community may be smart without NICTs. Indeed, NICTs are only the tip of the iceberg. The hidden and most significant portion of the iceberg is an ensemble of mechanisms, instruments, and perspectives, generally subsumed under the labels of collective intelligence and social learning. These are the basic forces that make the community smart as a community, and ever smarter as it continues to learn.

Collective intelligence and social learning mobilize and marshall intellectual, informational, physical and human resources in ways that produce a continuous flow of additional useable knowledge. This intelligence-cum-learning endeavour creates a geo-governance challenge: the challenge of uncovering the best way to organize the geo-technical communities of practice so that they can make the highest and best use of collective intelligence, and so ensure effective social learning when resources, power, and knowledge are widely distributed.

This paper explores in a preliminary way why smart communities are important, how they work, and how, through a variety of means, citizens might help make their communities smarter.

1. Why smart communities are important and how they work
In a knowledge-based socio-economy, extensive growth (through additional human and physical capital) does not suffice to ensure socio-economic progress. Much depends on the capacity to ensure that the different inputs work ever better together, and therefore on the development of improved forms of collaborative organization that will fully tap the collective intelligence, and generate effective learning. The lack of intensive growth – growth based on a capacity for continuous technical and organizational innovation – is by all accounts the source of the productivity slowdown in many socio-economies, and of the relative decline in their standard of living. Silo-type activities or conflictive turf-wars are disconcerting: they stunt the cooperation and co-evolution that are at the core of effective learning and productivity increases (Paquet 1998).

The extent of the disconcertion and dysfunction of an organization, a community or a socio-economy has therefore much to do with the inadequacy of what Alfred Marshall called “organizational capital”. Organizational capital refers to the internal organization of the units, the network of relationships (region, district, etc.) within which it is embedded, the set of capabilities they embody, the ways in which they are working in synch, and the socio-technical infrastructure required for all this to work (Loasby 1991). As Marshall put it, “capital consists in a great part of knowledge and organization; and, of this, some part is private property and the other part is not” (Marshall 1920: 138). Much of it is in the form of infrastructures, rules and social capital that are part of the commonwealth of relationships, networks and regimes.

Collaboration and innovation demand the sort of organizational capital that is capable of generating and supporting effective concertation but not too much, so that some degree of freedom and discretion are left with all partners for discovery and learning. A lacklustre performance is therefore prima facie evidence that the organizational capital in place is inadequate to generate both the requisite coherence that ensures the needed collaboration, and the right looseness, imbalance and tension likely to trigger innovation (Granovetter 1973).

While organizational capital is not the only basic input necessary for organizational effectiveness, community success, national productivity, and socio-economic progress, it is one of the key inputs and the most important enabling factor in these processes. It is also one of the most difficult ingredients to inject into an organization or community, because new organizational capital entails re-organization, by definition, and this breeds discontent and opposition because it modifies the sites of power and expropriates many power-holders’ existing leverage.

Still, a massive investment in new organizational capital is required to solve the sort of problems facing disconcerted socio-economies and communities. This entails a transformation of the governance and accountability structures to ensure that a more decentralized, more participative, less technocratic system is put in place, and one that draws on more effective collaboration of the private, public, and civic sectors (Hock 1995; Paquet and Roy 1998).

A. Distributed governance and multiple accountabilities

(1) In times of rapid change, organizations and communities can only govern themselves effectively by developing, as they proceed, both the capacity to learn (i) what their goals are and should become,
and (ii) what means are to be used to reach them. This is accomplished by tapping the knowledge that active citizens and groups already possess, and getting them to invent ways out of the predicaments they are in. This leads to more distributed forms of governance that deprive the leader of his or her monopoly on the governing of the organization: for the organization or community of practice to learn quickly, everyone must take part in the conversation, and bring forward each bit of knowledge and wisdom that he or she has that has a bearing on the issue. This calls for a dispersion of power, for a more distributed governance process (Paquet 1999a).

Distributed governance does not mean only a process of dispersion of power toward localized decision-making within each sector. It entails also a dispersion of power over a wide variety of actors and groups across sectors. In the context of rapid change, the best learning experience for these variegated actors and groups can be effected through flexible multi-sectoral teams, woven by moral contracts and reciprocal obligations, negotiated in the context of evolving partnerships (Paquet and Roy 1998).

Under ideal circumstances, a multifunctional esprit de corps materializes and provides a most fertile ground for social learning. It is based on the development through time of a social capital of trust, reasonableness, and mutual understanding that facilitates the multilogue, and generates a sort of basic pragmatic ethic likely to promote synergies among the many potential partner organizations (Lévy 1994; Thuderoz, Mangematin et Harrisson 1999). But the circumstances are not always ideal.

This means there is a need for explicit efforts to improve the mobilization of all participants through a wide array of mechanisms, coordination maps, and institutions. But, this is often much more difficult to realize than is usually presumed: the workings of collective intelligence impose conditions and constraints on such efforts (humans are not programmed termites, they need to be engaged in the process of collective intelligence, the terms of this engagement are constantly re-negotiated, and much of what they know is tacit). And, even if social learning can be promoted, not all social learning is necessarily feed-forward social learning (i.e., promoting the advancement of social learning). Well-intentioned efforts may well be useless, turn out to be much less effective than anticipated, or even backfire and generate overall perverse collective reactions. Consequently, the designed organizational arrangements may not catalyze collective intelligence well, or may mark out only a portion of the learning terrain, or may link the different components too loosely, or may generate slow learning or even unlearning.

(2) In a world of distributed governance, power is shared. Each person is an official, and has a burden of office. Each member of the community has ruling work to do: each participant is not simply a consumer of governance, but a producer of governance (Tussman 1989). Indeed, it is only because citizens qua citizens have duties and obligations that they are entitled to rights that ensure that they are fully equipped with the power to meet these obligations.

Attached to the burden of office is a commensurate accountability obligation. Accountability refers to the requirement to "answer for the discharge of a duty or for conduct". This presupposes an agreement on (i) what constitutes an acceptable performance and (ii) what constitutes an acceptable language of justification for the actors in defending their conduct (Paquet 1997).
Officials have a complex burden of office, and are confronted with (a) many interfaces with different stakeholders with different claims to authority (hierarchical superior, professional colleagues, clients, etc.), (b) many types of accounts demanded (political, managerial, legal, professional, etc.), and (c) much complexity, heterogeneity, and uncertainty in the circumstances surrounding the activities for which one is accountable. The very complexity of the burden of office results in much fuzziness in the definition of accountability.

Defining accountability in a single direction, or with reference to only one stakeholder, or with reference to only one dimension of the burden of office, or without taking account of the context, is extremely dangerous. It amounts to assuming that only one dimension is of consequence, and presuming that all other forms of accountability can be regarded as irrelevant, or secondary in some sense. This becomes obvious in a scenario where one might define for experiment’s sake his/her burden of office entirely in terms of the diktats of the organization’s financial services department: this could only lead to dangerous, and truncated notions of burden of office, accountability, and ethic.

In the face of such a nexus of accountabilities – many of them leading to contrasted and even contradictory demands – there is no easy way out for a community: there must be discussion, multilogue, and deliberation, leading to a fuller use of the collective intelligence and to social learning, and to an always imperfect, incomplete, and oftentemporary reconciliation of these different dimensions (Juillet, Paquet et Scala 2000).

But this social learning can only occur if certain conditions are met: i.e., (i) if the conversation with the situation is conducted within a context allowing for a meaningful conversation to be carried out, and (ii) if the conversation, deliberation, and accumulation of judgments are conducted with tact and civility, and a capacity to cope with multiple logics (Paquet 1999b).

The sort of learning generated by multilogue does not necessarily congeal into formalized decision-making and conclusions. It remains very much tacit knowledge, a capacity to deal effectively with matters of practice, and to deal with such matters in a timely manner and with a full appreciation of the local and particular context. Often, this tacit knowing materializes as a by-product, as a result of subsidiary or peripheral attention being given to some matters, while addressing other issues in a more focused way.

Indeed, as we shall see later, much of the effectiveness of social learning depends on a community’s capacity to generate tacit knowledge, and on its capacity to accumulate it, to build on such knowledge, and to make it explicit and easily shareable (Gill 2000).

B. Milieu and discovery

To cope with a technology-driven and dynamically evolving environment, organizations and communities must use the environment strategically, in much the same way as the surfer uses the wave: to learn faster, to adapt more quickly. This calls for non-centralization, for an expropriation of the power away from the top managers in an organization, or from any one organization in a network or a community. To be successful, decision-makers must mobilize all the favorable environmental
circumstances, and the full complement of imagination and resourcefulness in the heart and mind of each team player; consequently, they must be on the spot to take action; they must also become team leaders in task-force-type projects, quasi-entrepreneurs capable of cautious sub-optimizing in the face of a turbulent environment, and of engaging others to join in such ventures voluntarily.

This sort of strategy calls for lighter, more horizontal, and modular structures, for the creation of networks. These new modularized private, public, and civic organizations cannot impose their views on their clients or citizens. But these structural features are not sufficient: mechanisms must be put in place to ensure the requisite degree of consultation, deliberation and negotiation everywhere.

Leaders have to become brokers, negotiators, animateurs; a consultative and participative mode must obtain among the firms, the state, and the community groups; and the right balance must be found in this learning process between exploration for new knowledge and exploitation of the newly acquired knowledge (March 1991). While discovery is centrally important, it is equally important to make the highest and best use of the results of these discoveries, and not to mindlessly pursue novelty for novelty's sake.

Moreover, it must be understood that the processes and mechanisms of probing and discovery from within, so to speak, are only one blade of the scissors. The other blade is the external linking of the community with the environment through which a Darwinian selection occurs. These selection processes "provide the source of differential fitness – firms whose R&D turn up more profitable processes of production or products will grow relative to their competitors – and also tend to bind them together as a community" (Dosi and Nelson 1994:162).

The context is a complex nexus of forces shaped by market and non-market components, conventions, socio-cultural factors, and by the broader institutional structure. It is this ensemble of components, conventions, rules, structures, and regimes that constitutes the relevant milieu.

One may define the notion of milieu as "un ensemble territorial formé de réseaux intégrés de ressources matérielles et immatérielles, dominé par une culture historiquement constituée, vecteur de savoirs et savoir-faire, et reposant sur un système relationnel de type coopération/concurrence des acteurs localisés" (Lecoq 1989). Consequently, the notion of milieu connotes three sets of forces: (1) the contours of a particular spatial set vested with a certain unity and tonus; (2) the organizational logic of a network of interdependent actors engaged in cooperative innovative activity; and (3) organizational learning based on the dialectics between adapting actors and the adopting milieu (Maillat 1992).

In these search/discovery-cum-selection processes, social proximity plays a fundamental role. Both on the organization side and on the forum/environment side, proximity breeds interaction, "intelligence" and socio-economic learning (Boswell 1990); and these interactive mechanisms are fuelled by dynamic increasing returns to agglomeration. In most cases, these agglomeration economies are bounded, and therefore do not give rise to monopoly by a single region or location, but they nonetheless generate increasing returns snowballing (Arthur 1990).
At the core of the dynamic milieu are a number of intermingled dimensions (economic, historical, cognitive, and normative) but they all depend to a certain degree on trust and confidence, and therefore on a host of cultural and sociological factors that have a tendency to be found mainly in localized networks, and to be more likely to emerge in the presence of shared experiences, regional loyalties, etc.

This is social capital in Coleman's sense, and such social and cultural capital plays a central role both in meso-systems’ dynamics and their capacity to learn and transform (Coleman 1988; Saxenian 1994).

C. Collective intelligence

Even though it has been established that (1) distributed governance and multiple accountabilities are the defining characteristics of the new organization or community, (2) the environment is defined by an ensemble of mechanisms, network relations, belief systems, and social capital that is providing the environment with a causal texture (Emery and Trist 1965), and (3) the adaptation/adoption dynamic between the community and the environment and among the different groups inside and outside the organization or community (with their diverse frames of reference) plays itself out pragmatically much better in situ, i.e., in the context of practical meso-situations (Schön and Rein 1994), this does not suffice to ensure that effective coordination and learning will prevail. What is required in addition to these components – to ensure that a community becomes smart – is a basic coalescence of all these factors to ensure that the community has the capacity to mobilize competences effectively, and a capacity to probe and learn, to go beyond its limits (Lévy 1994).

Learning entails "the mutually consistent interpretation of information that is not fully codified, and hence not fully capable of being transmitted, understood, and utilized independently of the actual agents who are developing and using it" (Storper 1996:259). Knowledge is dispersed, and exists in a form that is not fully codified: this is a fundamental constraint imposed on the highest and best use of collective intelligence and on effective learning.

A central challenge then is to determine how such knowledge can be made explicit, and can be more effectively tapped and shared. This is a process that has been explored most creatively by Michael Polanyi (1964, 1966).

Jerry Gill (2000) has aptly synthesized Polanyi’s analysis in a simple diagram that explains how cognitivity proceeds from tacit knowing (bodily and subsidiary absorption of knowledge) as a person or community is involved in other more focused activities mobilizing their awareness, toward an explicit knowing, through processes that improve the awareness of this tacit knowledge by bringing it into focus, and helping to transform it in a conceptual form that is likely to facilitate its dissemination.

Gill’s graph of Polanyi’s dynamics of knowledge (Figure 1) maps this process in a simple way.

INSERT FIGURE 1
This calls for instruments, conventions, or relational transactions to define mutually coherent expectations and common guideposts for partners who have quite different visions of the world and frames of reference. The central challenge of collective intelligence often amounts to finding useful ways to effect such agreements on common guideposts in an oblique way, so as to avoid activating powerful defense mechanisms of those parties who have different frames of reference (and often fear some power loss as a result of reframing, and therefore likely to resist any effort to reframe the situation). Often these oblique strategies may be embedded in some innocuous reporting procedure that requires some dialogue, and often results in some significant and surprising subsequent reframing, because of the very non-threatening nature of the process (Juillet, Paquet, Scala 2000).

These instruments and conventions differ from sector to sector. They provide the requisite coherence for a common context of interpretation, and for some “cognitive routinization of relations” between communities and their environments (Storper 1996:259). Indeed, such coherence is a major source of nimbleness in the network socio-economy. Yet, as we mentioned earlier, a good learning network must not be too coherent: the nodes should not be too similar, nor the ties too strong or too routinized. Some heterogeneity and some social distance might foster a higher potential for innovation, because the different parties bring to the “conversation” a more complementary body of knowledge.

There is no way in which one can provide a comprehensive tabulation of all of the useful mechanisms or conventions necessary to ensure the effective operation of collective intelligence. However, the ways in which mechanisms and conventions have helped to pave the way to the highest and best use of collective intelligence can be illustrated. Gill’s study of Michael Polanyi’s philosophy has led him to provide such illustrations in a variety of domains.

FIGURE 1

Michael Polanyi’s dynamics of cognitive experience
D. Social

Making explicit is communication easier, but it does not ensure that a community will learn fast and become smarter. The social learning processes are based on good use of collective intelligence, but the existence of collective intelligence is only a necessary and not a sufficient condition for social learning. Therefore, both processes, though intimately related, gain from being examined separately. While collective intelligence is fundamentally raising an epistemic challenge, social learning raises a complementary informational challenge. The Boisot scheme dealing with the latter challenge of information codification and dissemination provides a useful complement to the Polanyi scheme focusing on the prior epistemic challenge. But, as will become obvious, these are intimately interconnected processes.
In order to analyze social learning *per se*, Max Boisot focuses on the different types of transaction structures. He has constructed a three-dimensional space – the *information space* – which identifies an organizational system in terms of the degree of *abstraction*, *codification*, and *diffusion* of the information flows within it. This three-dimensional space defines three continua: the farther away from the origin on the vertical axis, the more the information is codified (i.e., the more its form is clarified, stylized and simplified); the farther away from the origin laterally eastward, the more widely the information is diffused and shared; and the farther away from the origin laterally westward, the more abstract the information is (i.e., the more general the categories in use) (Boisot 1995).

Within the cube, Boisot has attempted to stylize the operations of the social learning cycle to capture the different phases of the processes of production and diffusion of information in organizational learning. This cycle is presented in two phases with three steps in each phase: phase I emphasizes the cognitive dimensions of the cycle, phase II the diffusion of the new information.

In phase I, learning begins with some scanning of the environment – and of the concrete information widely diffused and known – in order to detect anomalies and paradoxes. Following this first step (s), one is led in step 2 to stylize the problem (p) posed by the anomalies and paradoxes in a language of problem solution; the third step of phase I purports to generalize the solution found to the more specific issue to a broader family of problems through a process of abstraction (at).

In phase II, the new knowledge is diffused (d) to a larger community of persons or groups in step 4. Then, there is a process of absorption (ar) of this new knowledge by the population, and its assimilation so as to become part of the tacit stock of knowledge in step 5. In step 6, the new knowledge is not only absorbed, but has an impact (i) on the concrete practices and artefacts of the group or community.

In Figure 2, one can identify the different blockages through the social learning cycle: in Phase I, cognitive dissonance in (s) may prevent the anomalies from being noted, epistemic inhibitions of all sorts in (p) may stop the process of translation into a language of problem solution, blockages preventing the generalization of the new knowledge because of the problem definition being encapsulated within the *hic et nunc* (at) may keep the new knowledge from acquiring the most effective degree of generality; in Phase II, the new knowledge may not get the appropriate diffusion because of property rights (d) or because of certain values or very strong dynamic conservatism which may generate a refusal to listen by those most likely to profit from the new knowledge (ar) or because of difficulties in finding ways to incorporate the new knowledge (i).

It is not unimportant to emphasize that, while these mechanisms are of central importance in the process of mobilization of the core competences of a community, and underpin the process of social learning, they are not exhausting the range of mechanisms at work. The learning cycle represents only one set of key features of the learning process: the Boisot learning cycle stylizes the mechanical process of information formalization and dissemination, but it should not be seen as a reductionist ploy that would occlude other mechanisms at work in parallel – like the Polanyi mechanisms that help tacit knowledge become more explicit, or the mechanisms through which particular frames of reference
of different actors or groups taking part in the learning-generating conversation, are in some way transcended through the situated resolution of frame differences à la Schön/Rein (1994).

In some ways, these three families of mechanisms (at the informational, epistemic, and frame reflection levels) are integrally interconnected. And it would be unwise to argue that one is more important than any other. In a smart community, the mechanical blockages in information production and dissemination may at times appear as the least important of the blockages in the working of collective intelligence and social learning. They have been more mechanically described, and appear less opaque than the blockages in the knowledge explicitation à la Polanyi, or the frame reconciliation processes – in which a “situated resolution” of frame conflicts would appear to be possible through actors being persuaded to engage in co-design of solutions à la Schön/Rein, for instance. But, these three sets of processes interfere with one another, and, at times, any one of these sets of forces may harbour the most significant blockages.

This summary of the sort of governance challenges facing smart communities remains rather sketchy. It has not done justice to the extraordinary complexity that may ensue when the process of technological change, anchored in new communication and information technologies, plays havoc both with the ways in which the triple process of knowledge explicitation, knowledge codification and dissemination, and frame reconciliation works, and the ways in which these sub-processes interact.

These challenges can often only be analyzed and resolved \textit{in situ}. But this sketchy summary view might guide our exploration of the existing blockages on the road to smart community, and the various ways in which one might operate in these three dimensions to remove the blockages, and to help communities become ever smarter.

\textbf{FIGURE 2}

\textit{Learning cycle and potential blockages.}
2. How can one make communities smarter

Citizens, action groups, and the state have to rethink their action in the world of learning economies and smart communities. As Dalum et al. suggest (1992), this entails intervening to improve the means to learn (education and training systems), the incentive to learn (government programs supporting projects of cooperation and networks), the capability to learn (promoting organizations supporting interactive learning, i.e., more decentralized organizations), the access to relevant knowledge (through bridging the relationships between agents and sources of knowledge, both through infrastructure and mediating structures), but also fostering the requisite amount of remembering and forgetting (acting to preserve competencies and capabilities, but also to compensate the victims of change and make it easier for them to move ahead).

This in turn requires a well-aligned nexus of relations, networks, and regimes, and states can be important catalysts in the construction of the new “loose intermediation” social capital that is required: improving relationships here, fostering networks there, developing more or less...
encompassing formal or informal regimes at other places. This is the central role of what some have called the catalytic state (Lind 1992).

But it would be unwise to restrict interventions to institutional design. These sorts of frameworks have to translate into operating mechanisms and technologies capable of carrying on the tasks envisaged by the social architects. This socio-technical engineering to enhance capacity, processes, and due diligence is a momentous task, because it must fundamentally transform coordinating practices (Boland and Tenkasi 1996; Kling et al 1996).

However, improving design and operational setting will not suffice, either.

To transform a community of practice in a fundamental way, one must also be able to psychoanalyze the different partners, and tinker with their frames of reference (1) through disclosing and articulating with them the vision of the new world of coordination and (2) through engaging them to take part in it. To do so, civic entrepreneurs must engage in creative reframing at the level of perspectives and frame reflections at the same time as they do a considerable amount of gap-filling at the level of mechanisms and instruments, and at times help improve the institutional designs (Henton, Melville and Walesh 1997).

Much of this can be done by practitioners’ learning by doing – indeed, it is done by them in this way most of the time. But such work can be facilitated, and social learning accelerated, by some meta-reflections on the whole process of governance, and the crafting of more effective technologies of governance. Therefore, there is considerable merit to injecting into this world of practice a robust coefficient of phronesis or reflection-in-action: not only using Delta knowledge – practical knowledge – but reflecting on improving its uses (Gilles and Paquet 1989; Toulmin 1990).

This “reflection-in-action on reflection-in-action” has been somewhat ignored by the administrative sciences, and social scientists who remain much taken by the seductions of an exclusive focus on technical rationality and deductive reasoning (Schön 1983). But the institutional design/socio-technical engineering/civic entrepreneurship nexus of activities at the core of smart communities is now challenging the academy, and forcing governance experts (1) to revisit many concepts like rationality and causality, (2) to develop a refurbished “outillage mental” if they wish to be helpful to practitioners in their building of smart communities, and (3) to construct better evaluative instruments to gauge the success or failures of the new smart communities’ initiatives as they emerge (Schön 1995).

The vast terrain on which civic architects, civic engineers, civic entrepreneurs, and governance experts may intervene has been poorly mapped. It ranges all the way from modest efforts (1) to modify ever so slightly the macro-structure and dominant logic of the community; and (2) to shape its sociality (i.e., its capacity to create social glue and teams of all sorts); (3) to probe the conflicting frames of reference of the different groups (and their belief systems) with a view to innovating by finding meta-principles likely to get enough groups to ever so slightly reframe their perspective to allow for some workable collaboration to materialize; (4) to transform the whole world of institutions, rules, conventions, mechanisms, and monitoring instruments that can be more easily modified, but not always with much in the way of consequences.
Intervening in this nexus of forces is always perilous, since it is continually evolving through the feedback mechanisms that modify the system as learning proceeds.

A rough map of this broad terrain is sketched in Figure 3.

In this section, we cannot examine all aspects of this complex network governance system, but we will probe in a preliminary way the central challenges that smart communities’ governance is posing along four axes:

what can one do to make communities smarter

(1) on the new governance/ new accountabilities front?
(2) on the social proximity/effective coordination front?
(3) on the collective intelligence/social learning front? and
(4) through a better “outillage mental” for reflective practitioners, and a better evaluative capability to gauge the success or failures of smart communities’ initiatives?
Organizational culture refers to unwritten principles meant to generate a relatively high level of coordination, at low cost, by bestowing identity and membership through stories of flexible generality about events of practice that act as repositories of accumulated wisdom. The transformation of these stories constitutes collective learning, an evolving way to interpret conflicting and often confusing data through the social construction of a community of interpretation.

The macroculture of a community is its worldview. It shapes the ways in which the community decodes and interprets the changes in the environment, and the manner in which it reacts to such contextual changes by developing coping strategies: it defines the dominant logic, it shapes perspectives, and tends to promote the use of instruments and mechanisms in keeping with the dominant values and logics.

In the best of all worlds, learning relationships, networks, and regimes would emerge organically as a response to the need for nimbleness in the face of increasing diversity, greater complexity, and the new imperative of constant learning. Moreover, organizational and community cultures would become the important bond that would make these networks and regimes operative and effective at collective learning.

Unfortunately, one does not live in the best of all worlds. The requisite relationships, networks, and regimes do not necessarily fall into place organically. Moreover, at any time, the organizational/community culture in place may not underpin the design of the required relationships, networks, and regimes. Therefore, there is a need to design “auxiliary conditions” to ensure that the new governance structures can be eased in, and the new accountabilities put in place. At the core of these transformations is the agency of organizational/community culture.

Arie de Geus uses an analogy from evolutionary biology to explain the different ways in which civic architects may correct learning failures by bolstering (1) the ability of individuals to move around and to be exposed to different challenges (new relations), (2) the capacity of individuals to invent new collective ways to cope creatively in the face of new circumstances (new networks), and (3) the process of communication of the new ways from the individual to the entire community (new regimes) (de Geus 1997).

First, a certain heterogeneity is an important source of learning, since a community composed of identical individuals, with similar history or experiences, is less likely to extract as much new insight from a given environment. However, there must be a degree of interpersonal trust to sustain learning. This in turn requires a cultural basis of differences that members recognize and share (Drummond 1981-82). This “cultural” basis of heterogeneity and trust, and the mastery of weak ties (i.e., the capacity to build strong relations on weak ties), are obviously dimensions that can be nurtured, and represent a critical capability that civic architects may bolster (Laurent et Paquet 1998).

Second, learning is not about transmission of abstract knowledge from one person's head to another: it is about the "embodied ability to behave as community members". It is fostered by contacts with the outside, by facilitating access to and membership in the community-of-practice by tacit knowing. Trust is at the core of the fabric of such networks and communities of practice, that transform "labourers into members", an employment contract into a membership contract (Handy 1995).
Third, belonging is one of the most powerful agents of mobilization. So what is required is an important "moral" component to the new membership contract, to make it less contractual and more interactive. This new refurbished moral contract is "a network of civic engagement...which can serve as a cultural template for future collaboration...and broaden the participants' sense of self... enhancing the participants' "taste" for collective benefits" (Putnam 1995, 2000).

These loose arrangements, networks, or regimes provide the “bridging capital” (Putnam) likely to facilitate the learning process, the adjustment of the group to external shocks through different compensatory mechanisms of collaboration, and adequate forums for consultation and co-decision as the environment evolves from being more placid to being more turbulent (Emery and Trist 1965; Preston and Windsor 1992).

B. Agenda for civic engineers

It is not sufficient to design the requisite networks and regimes likely to support collaboration: these institutions must also instantiate the appropriate changes in the operations of the community. This entails a range of inter-related interventions that may be quite different depending on the nature of the coordination game. For instance, the forces at work in choosing a legitimate new form of coordination may be quite different from those at work in shaping the technical response to particularly taxing technical or institutional demands. In the former case, much may depend on the different value systems and perspectives, and on the harmonization of belief systems (perspective making), while, in the latter case, it may depend much more on the relative effectiveness of mechanisms and instruments.

These two stages are obviously not disconnected.

Often the strength of the forces of dynamic conservatism (Schön 1971) are such that a direct effort to reform the different belief systems, or to forcefully reconcile the different logics, may prove disastrous: those whose status, privileges, or assets are challenged by these sorts of initiatives are likely to mount forceful attacks to stop them. So an oblique approach through innocuous mechanisms and instruments may prove more effective. But whatever the right strategic mix might be, these two sorts of action (on the capacity front and on the process/due diligence front) will require attention (Juillet, Paquet, Scala 2000).

Capacity: belief systems, logics and resources

Some technologies have already been developed to allow individuals and groups to create visual depictions of their particular perspective on a situation in the form of a cause map, displaying their beliefs as to the major factors influencing their sphere of concern (Boland and Tenkasi 1996).

These might be used to make perspectives visible, and as an instrument to generate the basic understanding that different groups rely on different logics of coordination. Such maps provide a
shared language among partners, and create opportunities for an on-going dialogue among partners capable of generating social learning and not just eliciting blame.

These diverging perspectives are not simple impediments to learning (as group-thinkers would suggest) but, through their variety, valuable resources that must be developed through time, experience, and continuous dialogue. But these resources, capabilities and “knowledges” are embedded in individuals, and they are difficult to simply pass along to new partners and colleagues. As a result, involving partners in “cause mapping” is going to be both very constructive, but also very time-consuming. Moreover, this road is fraught with so many sensitivities, and may be so easily disrupted by personnel turnover (dissipating the social capital accumulated by key personnel through experience), that one is often forced to opt for the roundabout way to deal with belief systems (i.e., via process and due diligence).

**Process and due diligence: mechanisms and monitoring instruments**

On the process/due diligence front, much depends on the focus of the system of monitoring that is in place to continuously assess performance, and on the generation and diffusion of mutually intelligible and trustworthy on-going information among partners and stakeholders.

Where collaborative endeavours include different levels of government or organisations in the private or community sectors, developing a reporting framework that allows partners to meet the needs of their own internal accountability structure, while allowing for an effective form of collective reporting, could create significant challenges. However, it is imperative for the success of collaborative efforts to attempt to respect the perspectives and organizational realities of each partner. In particular, collaborative strategies must avoid imposing reporting requirements that could be so onerous as to result in disengagement.

Mechanisms like a shared complaint and appeal process, or citizen-centred service evaluations within a negotiated accountability framework that involves all partnering agencies, or a more formal and structured process of third-party monitoring and performance evaluation, may be difficult to maintain as agencies are reluctant to receive criticism through mechanisms involving other agencies. Nevertheless, in a context of collaborative governance where social learning is a requirement for effectiveness and adaptation, such mechanisms contribute to a level of transparency among partners, and to a positive form of horizontal accountability.

In all such cases, some modest tinkering with monitoring instruments may have a significant impact on the mechanisms in place (giving them more potency) and on the perspectives of the different partners (allowing them to indulge in frame analysis that may result in some reframing). Moreover, such interaction (in the small) may reverberate on the broader features of the community (governance relations, dominant logic, macroculture) through the feedback mechanisms.

C. Agenda for civic entrepreneurs

Design and socio-technical engineering are not sufficient. The smart communities also require
“champions” – civic Olympians – who will provide the necessary creative thrust for progress in the private, public, and civic spheres.

Spinosa, Flores and Dreyfus (1997) have shown that the engines of entrepreneurship (private sector), democratic action (public sphere), and cultivation of solidarity (civil society) are quite similar. They are based on a particular skill that Spinosa et al call ‘history-making’, and that can be decomposed into three sub-skills: (1) acts of articulation -- attempts at ‘définition de situation’ or new ways to make sense of the situation, (2) acts of cross-appropriation -- to bring new practices into a context that would not naturally generate them, and (3) acts of reconfiguration -- to reframe the whole perception of the way of life.

Such individual actions are not sufficient to generate new capabilities, nor to trigger the required bricolage of effective technologies of collaboration in the different worlds, but they are often important triggers. As Putnam (2000) puts it, the renewal of the stock of social capital (relationships, networks, regimes) is a task that requires the mobilization of communities. This in turn means that there must be champions capable of actions that resonate with communities of interpretation and practice.

This is at the core of the notion of institutional governance proposed by March and Olsen. For them, the craft of governance is organized around four tasks: developing identities, developing capabilities, developing accounts and procedures for interpretation that improve the transmission and retention of lessons from history, and developing a capacity to learn and transform by experiments and by reframing and redefining the governance style (March and Olsen 1995:45-46).

Civic entrepreneurs play a significant role as “interpreters” and “promoters” on each of these fronts. They define the “style” of the community, and work at modifying the very nature of the equipment, tasks, and identities in these worlds. This transforms the organizational capital, but also the rest of the assets base of the system and stimulates a different degree of re-articulation and reconfiguration, and enriches the possibilities of cross-appropriation. Civic entrepreneurs are meaning-makers. Their contributions may appear modest and symbolic, and, because of it, their efforts are often discounted as simple boosterism because they appear to deal only with peripheral realities and intangibles. But their action is fundamental.

There is no way we can hope to transform any “world” (in the private, public, and civic spheres) unless we can first disclose this “world” (in the sense that we use the word “world of business” or “world of medecine”). By “world”, we mean a “totality of interrelated pieces of equipment, each used to carry out a specific task such as hammering a nail. These tasks are undertaken to achieve certain purposes, such as building a house. This activity enables those performing it to have identities, such as being a carpenter”. Finally, one might refer to the way in which this world is organized and coordinated as its style (Spinosa et al 1997:17-19). Articulation, cross-appropriation, and reconfiguration are means of style change (making explicit what was implicit or lost, gaining wider horizons, reframing) in a given world, and therefore changing it.

We have synthesized this dynamic in Figure 4 below. It depicts the political socio-economy as an
“instituted process”, characterized by a particular amalgam of assets, adroitly used and enriched by political, economic, and civic entrepreneurs, through skillful articulation, cross-appropriation and reframing activities, and woven into a fabric of relations, networks, and regimes that define the distinctive habitus of a political economy as a complex adaptive system.

D. Agenda for practice-enhancing governance

Smart communities do not only pose challenges to practitioners. They also raise questions about the contribution that governance experts can make to the understanding of these new realities. While the task of civic architects, engineers, and entrepreneurs in the governance of smart communities is relatively clear, the role of governance experts is less obvious. It might even be suggested that they have little to contribute beyond some peripheral reflections on the challenges posed to the other three groups. This is a rather simplistic view.

The governance of smart communities raises a number of conceptual issues on which governance experts have much to contribute. They can be identified under four general rubrics: (1) the challenges of collaboration: we still have a less than perfect understanding of the rationale for entering into collaborative arrangements, and of the rationale for honoring one’s commitment once a “moral contract” has been entered into; (2) the challenges of coordination: what is necessary to ensure effective coordination when power, resources, and information are distributed remains unclear in many settings; (3) the challenges of social learning: the whole new epistemology of practice that appears to underpin the process of social learning (including the four complexes of mechanisms we have underlined above – Polanyi mechanism, Boisot learning cycle, network governance process, civic entrepreneurship world) is not well understood; (4) the challenges of evaluation: the very notion of a workable template to evaluate a smart community project’s success or failure remains ill-defined.

In the rest of this section, I indicate (a) why these four conceptual challenges require a paradigm shift in administrative science research, and (b) what the new paradigm might look like.
Why these questions cannot be analyzed usefully in a positivist mode
As we indicated, the four complex mechanisms that underpin the process of social learning remain somewhat under-explored. This is largely because of the fact that they are not easily amenable to the usual positivist methods of inquiry dealing with objective knowledge.

The matter has been insightfully examined by Donald Schön (1995). He uses the word “inquiry” in the sense of John Dewey – thinking and acting that aims at resolving a situation of uncertainty, doubt, or puzzlement – and regards inquiry as a form of intervention experiment. These experiments may be simply exploratory, they may also be hypothesis-testing, but they are often in organizational analysis “action undertaken in order to change a situation for the better”. In such cases, success means that the intended consequences are brought about, and the unintended consequences are acceptable and desirable.

In this sort of intervention experiment that is at the center of governance analysis, the point is not to falsify the hypothesis – a step that would be consistent with the canons of scientific experimentation – but to create a wholly new, unprecedented situation that, in its possibility for generating new knowledge, goes substantially beyond the initial hypothesis” (Friedmann and Abonyi 1976:936). In this world, “acting and knowing are united in a single process of learning” (Friedmann 1978:86). “Through transactive planning... social practice discovers how to deal with a specific problem. Social practice may thus be understood as a process that generates not only a new tangible reality but also the means of acquiring new knowledge about it” (Friedmann and Abonyi 1976:938).

This sort of situation does not lend itself to the usual positivist mode of analysis.

What the paradigm of social practice entails

As early as 1938, Chester Barnard introduced a distinction in the management literature between “thinking processes” and “non-logical processes,” and insisted that the latter were omnipresent in effective professional practice (Barnard 1938). More recently, Henry Mintzberg has insisted that administration is an activity that is based in large part on the development of perception and strategic thinking with the right side of the brain — the locus of the implicit, of the experimental, of the synthetic. He has also often reiterated that strategies are not deduced; rather they are crafted, they “emerge” (Mintzberg 1976, 1987).

At the core of this process of crafting is what Schon and Rein (1994) have called design rationality: it connotes the capacity to reflect systematically, rigorously, and cumulatively in action as the inquiry proceeds. This is a process of focused rational exploration that is quite familiar in professional practice, strategy, and design. Since the problem is ill-structured to begin with, one must, of necessity, begin with the sort of exploration that Henri Lefebvre (1961) called “experimental utopia” (“l’exploration du possible humain avec l’aide de l’image et de l’imaginaire, accompagnée d’une incessante critique et d’une incessante référence à la problématique donnée dans le réel”).

This exploration is geared to the generation of a form that fits: it is a conversation with the situation, an interactive learning process. It calls for a cerebral operation that is quite different from both deduction and induction, and that Lefebvre has called transduction.
The process of transduction “construit [...] un objet possible [...] à partir d’informations portant sur la réalité ainsi que d’une problématique posée par cette réalité” (Lefebvre 1961). This process of transduction characterizes many of the cases analyzed by Schon, and fits very well with his generalized notion of design rationality (Schon and Rein 1994:167ff).

Learning in this context is like learning to swim: it is done by eliminating misfits, by correcting errors, and by continuous re-alignment to ensure goodness-of-fit between elusive standards and circumstances. There can be no learning unless one recognizes and embraces error as a fundamental building block, as a crucial way to fuel fruitful deliberations. The new competences required in such knowledge-based learning systems develop only under certain conditions. There must be an explicit acknowledgment of the high level of uncertainty as completely irreducible; an explicit will to embrace error as the difference between what is expected and what happens; and a willingness to span boundaries across perspectives (Michael 1993).

This reflection-in-action requires a conversation with the situation. It is a social act. It is the result of “argumentation — amongst particular people, in specific situations, dealing with concrete things, with different things at stake” (Toulmin 1990 And deliberation and argumentation are possible only within the community of communication composed of the stakeholders, of those affected. Thus, delta knowledge, as embodied savoir-faire, does not materialize through an individualized process of abstraction. It materializes through a social process which resembles the one through which a child learns a complex practical system like a language.

Conclusion

Smart communities are creating new geo-governance challenges: they require a new form of governance and leadership if they are to yield their promised returns, and it will only emerge in action through the collaboration of a range of experts on intellectual capital – which is at the core of the smart
community process.

In this exploratory paper, we have put forward a preliminary mapping of the “terrain des opérations”, and a provisional division of labour among four groups of stakeholders.

In our view, one must recognize the central importance of the following features of smart communities, and that one of the key challenges is to eliminate the blockages that appear to prevent them from playing their full roles:

* distributed governance
* multiple accountabilities
* multilogue and deliberation
* tacit knowing
* milieu dynamics
* collective intelligence
* Polanyi’s dynamics of cognitive experience
* Boisot’s learning cycle
* network governance
* governance process

These ten features may be modified in a variety of ways: through redesign of institutions or conventions, through some re-structuring, organizational carpentering or re-tooling, through reconfiguration of the game of coordination altogether, or its reframing, or through some meta-reflections likely to lead to any of the above.

We have suggested a few examples of the ways in which different actors might intervene differently in the various components of the geo-governance process, either to remove obstacles or to improve the workings of the different components of the governance process.

It must be noted that very few of these interventions are dependent on the NICTs. Most clearly call for interference in the dynamics of the community per se, through non-technical means. Indeed, the omnipresence of trust, as a facilitator of interaction, serves as a good illustration of the sort of “intangible” factor that appears to be at the core of the new governance challenges.

Whether smart communities succeed or not depends on rules of engagement and terms of agreement. Little can be resolved technologically on this front.

GP/

Bibliography


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