

INNOVATION PATTERNS¹

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ABSTRACT

Glor (2001a) has argued that the relationships among three factors at work in government organizations lead to innovation occurring in patterns. This paper identifies the dynamic interaction of individual motivation, organizational culture, and the challenge presented by an innovation to produce patterns and tests their reflection in real environments.

Eight innovation patterns are identified: reactive, imposed, active, necessary, proactive, buy-in, transformational and continuous innovation. The paper then examines evidence that the patterns exist three ways. It tests whether observers can distinguish the three factors and identify the patterns in innovations with which they have been personally involved. The proposition that innovation occurs in patterns is tested further by attempting to identify and succeeding in finding an example of each pattern.

Next, the argument is made that it should be possible to distinguish the patterns according to their level of creativity, the implementation environment, and the outcomes. This proposition is verified. Then, a systems analysis of the innovation patterns proposes an explanation for the suggested outcomes: outcomes become inputs for the next cycle of innovation, and create reinforcement. Self-balancing or self-reinforcing feedback loops are created that determine whether innovations cancel each other out, causing innovation in an organization to sputter and fail, or create the capacity for ongoing innovation. The paper concludes by suggesting that the patterns point to areas for intervention to modify those outcomes. Hypotheses for further exploration are constructed.

INTRODUCTION

According to Everett Rogers (1995), the study of innovation as a phenomenon started with the examination of the dissemination of innovations in France in 1903 and in England and Germany soon afterwards. In the USA innovation was studied in the 1920s in anthropology and in the 1930s through examination of the dissemination of hybrid corn. Rogers identified communication as a cardinal factor in the dissemination of innovations (Rogers, 1995). Beginning in the 1960s, American and Canadian sociologists and political scientists shifted from study of dissemination of individual innovations to study of the adopters, especially American and Canadian governments. They considered whether the circumstances or characteristics of the adopters determined whether they were initiators, early adopters, late adopters or laggards in their adoption behaviour. Much of this comparative research on government traits was quantitative. The possibility was raised that innovation adoption did not follow a unique path with each event, but that it adhered to a characteristic form or pattern of behaviour (Mohr, 1969; Walker, 1969; Light, 1978; Gray, 1973). The traits of early adopting governments were

¹ The concept of innovation patterns was initially developed in a paper presented by the author to the 1997 Roundtable, International Institute of Administrative Sciences, Quebec City, Canada, July 14-17, 1997. Thanks to Ken Kernaghan, Ann Langley, and anonymous reviewers for their helpful comments. Any views expressed in this paper are personal.

examined, and the characteristics of governments and the nature of populations were suggested as possible causal factors. Governments with reputations for innovativeness—like Minnesota in the USA and Saskatchewan in Canada—were only partially explained in this way, however. Following considerable debate about the methods of study employed, Savage concluded, nonetheless, that there was indeed a governmental trait or pattern of innovativeness (Savage, 1978).

A separate stream of study considered the patterns of innovation within organizations. Linked to the thinking of psychologists such as Abraham Maslow (1970), who had developed the concept of the self-actualizing individual, social psychologists like Bandura (1997) related innovation to personal motivation. Bandura described a personal trait, *self-efficacy*, that allowed individuals to remain in control, self-motivated, effective and innovative in most situations.²

Management science, on the other hand, accentuated individual (mostly elitist) leadership roles in changing the organizational structure, organizational culture, and individual employees' motivations so that change and innovation could be introduced more easily in a presumably reluctant and unwilling organization, often a large bureaucracy. Here factors such as leadership and techniques creating irresistible forces for change were identified, almost always with the view that there was one best way to run any organization and to create innovation. This approach was often based on case studies and lessons learned, as opposed to either quantitative or qualitative exploration of the phenomenon of innovation. Management studies typically suggested enhancing innovation in organizations through changes in leadership, structure and culture. Introducing change and innovation was seen to be a responsibility and prerogative of management, and the approaches exhibited a pro-innovation and reductionist bias. Change was seen to occur, for example, through use of specific structures such as teams.

During the 1960s, some sociologists and systems theorists of change, including Everett Rogers, began moving away from concentration on both organizational and individual traits and roles. Instead, they started to see change as a process. These efforts to explain change have used organizing concepts, many of them quite old, such as contextualism; population ecology models; organizational life cycles; power in organizations; political models of change; social action theories, the organization and situation as defined by individuals; and the use of metaphor, for example the organization as theater (Elkin, 1983; Wilson, 1992). These approaches were not entirely new. Engels had used political and social action models of change, individual perceptions were seen to play a tremendous role by Dilthey and Weber and the German idealists from Kant onwards, metaphors were used by Herbert Spencer and fifty years later by Norton Long—who referred to local community politics as an *ecology of games*. The authors did not usually address innovation as a pattern, however, except to suggest innovation might occur in cycles. Tant was one exception, in his emphasis on “the role of institutionalized political culture as inhibiting other than marginal change.” (Tant, 1993: 7) Process and systems approaches emphasized the possibility that organizations are not static, but change all the time. This was not entirely new—Heraclites in Ancient Greece, Bennis and Slater (1998), Boulding (1970) and Etzioni (1968) agreed. These ideas had at least the potential to describe organizational

² The concepts of personal effectiveness developed by Stephen Covey and John Bradshaw were based on similar approaches.

functioning in creating innovations in terms of patterns rather than merely as the product of innovation decisions that achieved pre-determined outcomes. Patterns acknowledge and integrate the effects of combinations of individuals, organizational culture, structures, and ideas at work in organizations. This paper attempts to expand the notion of innovation occurring in patterns by developing some hypotheses and performing some initial tests of the hypotheses.

METHODOLOGY AND HYPOTHESES

Others have recognized the value of interrelating the individual and the collectivity: In 1990, Perry and Wise issued a challenge, to develop a “model that operationalizes the linkages between individual values, organizational environment and task structure, and outcome.” (Perry and Wise, 1990: 372) This paper takes up that challenge by attempting to identify innovation³ patterns created in different individual motivation, organizational culture and challenge environments. As with other dynamics, their characteristics are most easily distinguished in a bimodal fashion, but reality is rarely strictly bimodal. Nevertheless, this somewhat reductionist approach allows the observer to consider at one time three major forces that influence innovations and to explore the nature of the patterns formed.

First, criteria are defined for the three dynamics. Next, motivation, organizational culture and challenge are formed into eight innovation patterns. Patterns relate these dynamics and are more powerful than an approach that addresses the factors independently. Subsequently, an example of each pattern is identified. Then, the implications of the eight patterns for the creativity, implementation and outcome of innovations are explored. Finally, a systems analysis of the innovation patterns advances an explanation for the outcomes.

Hypotheses

Seven hypotheses are proposed and some initial tests are conducted in this paper:

- Innovation occurs in patterns.
- How people are motivated, the culture of a government organization and the magnitude of challenge are primary relationships in determining patterns of innovation.
- Innovation patterns predict the creativity of the ideas considered, the implementation environment and implementation challenges to be faced, and the fate and impact of innovations.
- The eight innovation patterns help to identify the issues to which practitioners should pay special attention during the implementation process.
- A systems analysis of the patterns can identify stable and unstable innovations, and can therefore predict their long-term probability of success. Therefore,
- Innovation patterns in an organization can suggest the areas where leaders and staff could intervene most beneficially.

Criteria for Individual Motivation, Organizational Culture, Challenge

A first step in identifying the patterns is defining criteria for the dynamics that are used to compose the patterns. Based on Glor’s (2001) analysis, criteria for the three dynamics are

³ In this paper innovation and change are used interchangeably since many of the same dynamics are at work in them.

identified below.

Motivation. *Intrinsic task motivation* is thought by Thomas and Velthouse (1990) to be created through: (1) meaning (value of work goal or purpose), (2) competence (self-efficacy), (3) self-determination (autonomy in initiation and continuation of work, plus self-determined goals (Cofer, 1996)), (4) impact (influence on work outcomes), (5) staff motivators being aligned with the initiative being undertaken. This alignment is reflected in Perry and Wise's (1990) (a) public sector affective motivation. Affective motivation is based on personal identification with a program that develops out of such factors as conviction about its social importance, service to society, and Frederickson and Hart's (1985) patriotism of benevolence, a combination of caring about the government's values and caring about others. (b) rational motivation. Rational motivation is grounded in individual utility maximization, and includes desire to participate in the formulation of good public policy, commitment to a program because of personal identification with it, and conscious or unconscious advocacy for a special interest. (c) norms-based public sector motivation. Norm-based motivation, based on idealism, includes the desire to serve the public interest, nationalism, loyalty to duty and to the government as a whole, and a commitment to social equity, defined as enhancing the well-being of minorities. Intrinsic motivation is also induced through (6) the inherent reward of an act itself (Cofer, 1996), and (7) individual consciousness (Etzioni, 1968).

The criteria for *extrinsic motivation* include: Perry *et. al.*'s (1993) four managerial motivations: (1) productivity (efficiency), (2) service-enhancement, (3) organizational control, and (4) risk avoidance, (5) influenced by individual, job, work environment, and external environments (Perry and Porter, 1982). (6) arbitrary rewards and goals (Cofer, 1996). James Perry (1993, 1997), in particular, has attempted to develop a validated measure of public service motivation.

As the variety of definitions for motivations make clear, individual motivation is not static. What motivates someone in one personal state and one environment will not be identical to what motivates them in another, but individuals tend to have patterns of motivation—to be typically intrinsically or extrinsically motivated.

Organizational Culture. A *bottom-up culture* is characterized by: (1) Empowered relations, (2) Decentralization, (3) Organizational *slack* (excess capacity), (4) Professional/people and task/business cultures (Handy, 1986), (5) Emphasis on interpersonal communication patterns, (6) Staff encouraged to have and cultivate exterior networks, (7) Providing information to staff (although this point is not clearly demonstrated), (8) Recognition of the organization as a social system based on conflict, politicking and inherent tensions between individuals, departments and organizations, (9) Analysis of change from the perspective of the individual's definition of the situation, (10) Organization supports staff, pays attention to their ideas, creates strategies for and implements those ideas (Glor, 2000), (11) Organization involves staff and puts organizational resources under their control (Glor, 2001b), (12) Some degree of democratic control in the workplace, and (13) organizational consciousness, parallel to Etzioni's (1968) societal consciousness.

A *top-down culture* is characterized by: (1) Hierarchical relations and a focus on the control or authority structure (2) Centralization and formalization (3) Role and power cultures

(Handy, 1986) (4) Emphasis on formal communication patterns, staff encouraged to “use channels” (5) Emphasis on structure and “one best way” of doing things (6) Provision of direction to innovate from above—for example from management or cabinet ministers (Glor, 2000).

Challenge. Challenge basically has two aspects, risk and relative advantage.

A *minor challenge* is a: (1) Low risk to individuals and/or the organization and management in terms of status, opportunities, self-esteem, time, work and psychic energy, (2) Low personal risks, little loss of power, money, status and respect, (3) Low public risks, involving failure, career consequences, public scrutiny and/or negative media attention, (4) Low magnitude of change, (5) Compatibility with existing values and past experience of the implementers of the innovations, (6) Low perceived commitment to further change and low threat of change, (7) Innovation dealing with operational decisions, incremental change, status quo/expanded reproduction, evolutionary transition, (8) No or minor changes in power and power relationships within the government or vis-à-vis groups outside the government. (9) High relative advantage of the innovation compared to what it is superceding, low complexity both in terms of understanding and use, high testability of the innovation, and observability of the results.

A *major challenge* includes: (1) High risk to individuals and/or the organization and management in terms of status, opportunities, self-esteem, time, work and psychic energy, (2) High personal risks, involving loss of power, money, status and respect, (3) Public risks, involving failure, career consequences, public scrutiny and/or negative media attention, (4) High magnitude of change, (5) Low compatibility with existing values and past experience of the receivers, (6) High perceived commitment to further change and high threat of change, (8) High threat, strategic change, evolutionary transition/revolutionary transformation, or changes in power relationships within the government or vis-a-vis groups outside the government, (9) Low relative advantage of the innovation compared to what it is superceding, high complexity in terms of understanding and use, low testability of the innovation, and observability of results.

This paper does not attempt to validate these criteria, although Perry (1993, 1997) has had some success validating his motivations. At this point, these criteria should best be regarded as one of Bacharach and Lawler’s (1980) primitive concepts, that sensitize to issues and aid theory construction. While it is not possible to be precise, the patterns that would be produced by the three dimensions of motivation, culture and challenge in interaction are explored below.

MAPPING THE PATTERNS

The model of innovation incorporates the dynamics of individuals, organizational culture and the challenge into patterns. Interrelating the three dimensions constructs a map of eight innovation patterns, that have been named reactive, imposed, active, necessary, proactive, continuous, buy-in, and transformational innovation (Table 1). They are described below.

Table 1: Innovation Patterns, Based on Individual, Culture and Challenge Dynamics

Innovation Pattern	Motivation	Culture	Magnitude of Challenge	Example
Reactive	Extrinsic	Top-down	Minor	Introduction of operating budgets in Gov't of Canada
Active	Extrinsic	Bottom-up	Minor	Customs' Missing Children
Necessary	Extrinsic	Bottom-up	Major	Shipyard Repair Atlantic (power, way done), DND
Imposed	Extrinsic	Top-down	Major	Literacy New Brunswick (major change in outcomes, changed delivery culture by changing delivery agent)
Proactive	Intrinsic	Bottom-up	Minor	Agriculture Canada partnerships data base
Continuous	Intrinsic	Bottom-up	Major	Health Promotion, Health Can.
Buy-in	Intrinsic	Top-down	Minor	Mississauga Capacity Building
Transformational	Intrinsic	Top-down	Major	Sask. Potash Take-Over

Extrinsically motivated innovations are often oriented to solving problems. The innovations are either programmed ahead of time or introduced in response to stress or distress. Among 217 innovations studied, Borins found that 49% were responding to internal problems, 30% ahead of crises and 19% to political factors (more than one reason was allowed) (Borins, 1999: 375-387). The crises and political factors probably created extrinsic motivation. When innovations of minor challenge are created in a top-down culture in combination with extrinsic motivation, *reactive innovation* results. The mixture of a top-down culture and major challenge with extrinsic motivation forces innovation on employees and produces *imposed innovation*.

Extrinsic motivation can also occur in bottom-up cultures, though one of the objectives of such cultures is often to induce and facilitate intrinsic motivation. This combination could occur, for example, when exterior forces such as budget deficits impinge on organizational units. Although in such a situation staff are not intrinsically motivated, they can organize to deal with the challenge in a bottom-up matter. This unusual combination of extrinsic motivation with a bottom-up culture produces *active innovation* when combined with minor challenge. Extrinsic motivation combined with a bottom-up culture and major challenge produces *necessary innovation*.

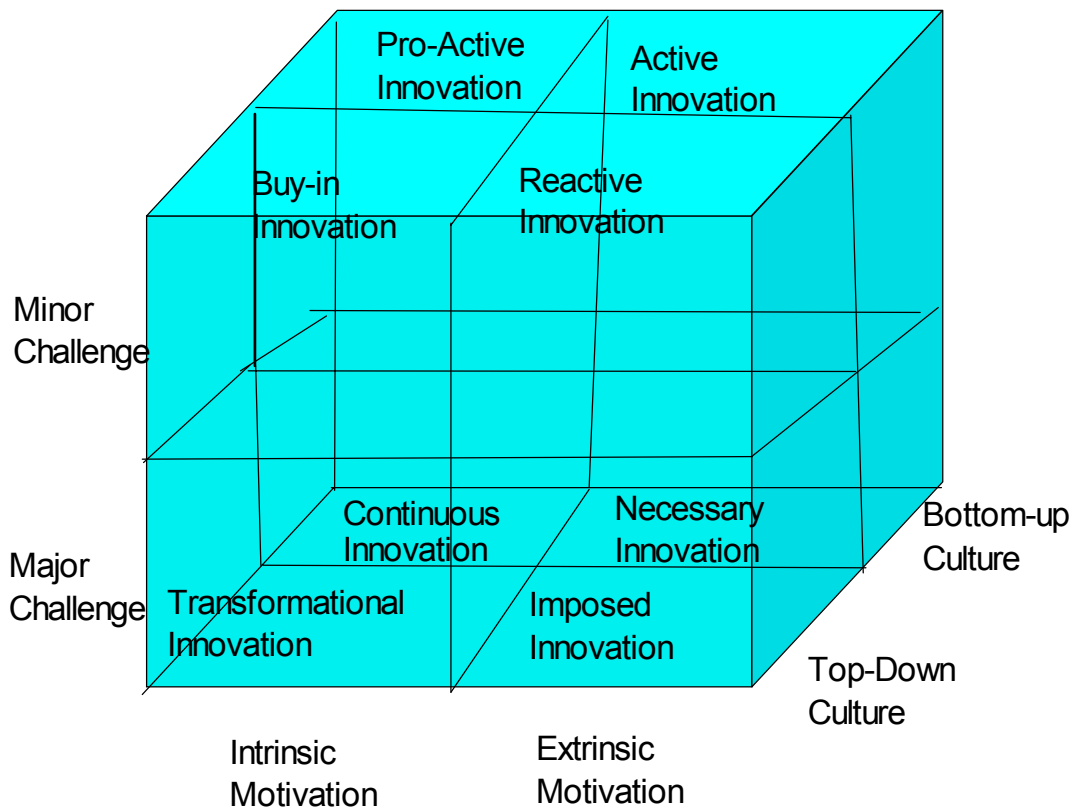
Intrinsic motivation produces quite different kinds of behaviour: There is more problem seeking and more problem solving at the local level than when people are extrinsically motivated. Intrinsically motivated innovations oriented toward problem finding often grow out of *slack* in the organization. They result from personal initiative, when individuals have or create the time to concentrate on something besides their immediate work: In such cases, the

individual takes steps to deal with organizational or governmental problems either because the problem interests them or because the process to solve the problem interests them. Borins found 49% of the innovations he studied were responding to internal problems and 33% of the innovations were created in response to opportunities (Borins, 1999: 377). A combination of intrinsic motivation with a bottom-up culture and minor challenge produces *proactive innovation*. From some perspectives proactive innovation can be seen as problem focussed, but the creation of solutions before agreement to solve the problem has been achieved within the organization places it in a less convergent, active, problem-solving category.

If necessary, staff can recognize the validity of innovations imposed by others. The combination of intrinsic motivation with a top-down culture and minor challenge creates *buy-in innovation*. In an environment where individuals are intrinsically motivated but there is a top-down culture and major challenge, *transformational innovation* is created.

Intrinsic motivation combined with a bottom-up culture and major challenge creates *continuous innovation*. In continuous innovation major change is created both through cumulative minor changes and through periodic major changes. Figure 1 represents the three factors of motivation, culture and challenge relating to form the eight models of innovation.

Figure 1: Innovation Patterns, Based on Source of Motivation, Organizational Culture and Magnitude of Challenge

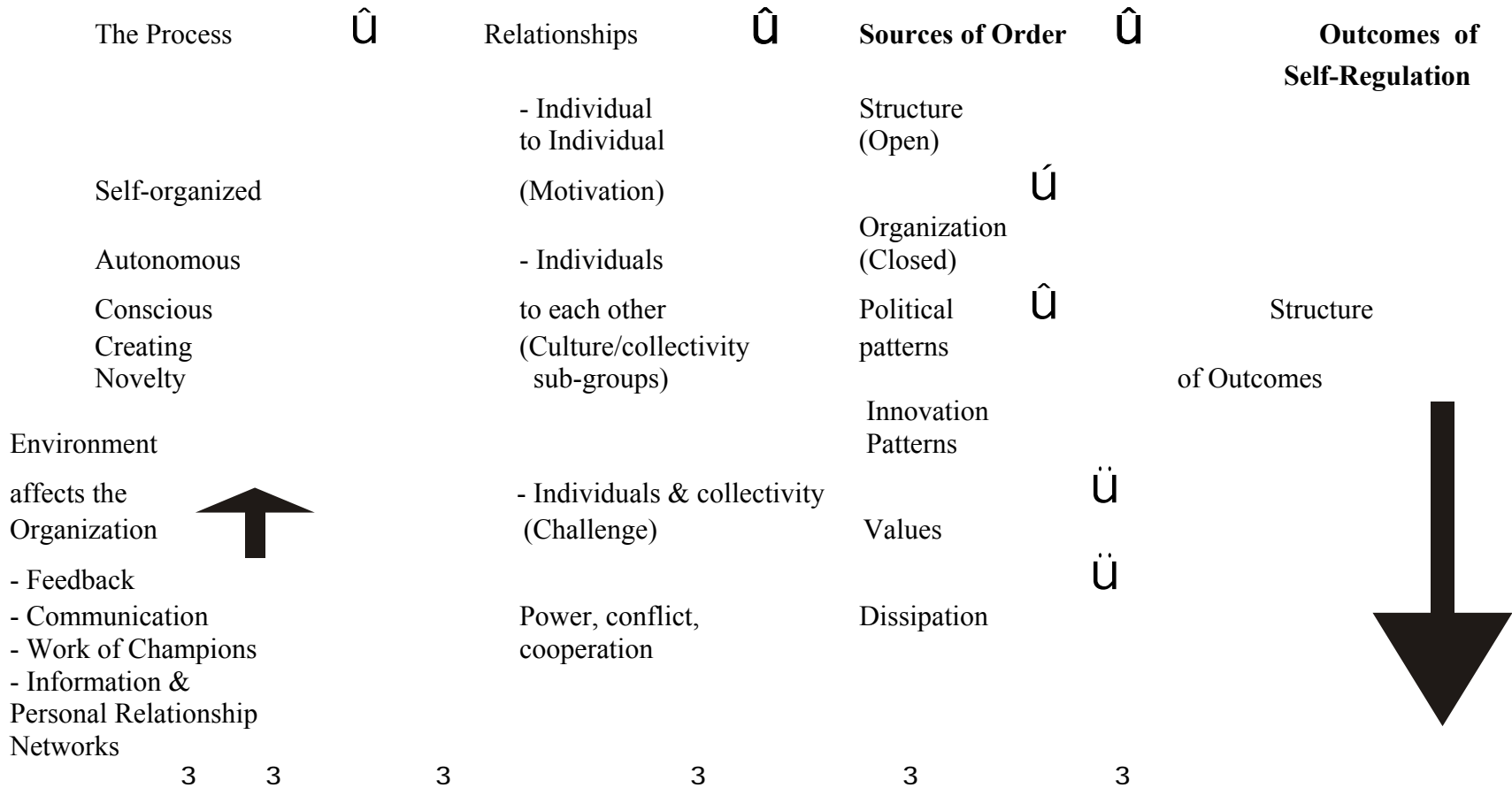


Discussion of Patterns

Albert Bandura (1986: 154) has suggested that the course of diffusion of innovations is best understood as a product of interactions among psycho-social determinants, network structures, and properties of innovations, and that structural and psychological determinants of adoptive behaviour should be addressed. These factors are very similar to individual motivation, the organizational culture and the challenge of an innovation identified in this paper.

A pattern of thinking (here called culture) has been treated in systems analyses as “a configuration of relationships characteristic of a particular system,” according to Fritjof Capra (1996: 80). The study of patterns therefore focuses more on form than substance. Although the systems approach does not emphasize structure, patterns are consistent ways of doing things. The three factors can be seen as being in relationship. The individuals within an organization relate to themselves (individual motivation), to each other (culture) and to the innovation (challenge). Together these relationships among the individual, collectivity and challenge interact to form the eight patterns identified in this paper. They do so, however, within a context that consists of the processes of self-regulation, both autopoietic and responding to things that are impinging from the environment, and the sources of order within the organization. Systems theory identifies both structure/order and dissipation as sources of order. Both structure and dissipation are at work at the same time. Once they are formed, the innovation patterns may actually function as a process bringing order to the organization as well. These relationships are portrayed in Figure 2. A question for further examination is whether the outcomes growing out of these relationships and processes also form patterns.

Figure 2: A Representation of the Context for Innovation in Government



Self-balancing feedback loop or self-amplifying feedback loop copyright Eleanor Glor

The work of Robert Putnam (1993) on civic culture and its relationship to good government, innovation and progress raises the question of whether organizational culture and societal culture are related. Do hierarchical and elitist civic societies tend to have hierarchical and elitist organizations, while participative and democratic societies tend to have participative and democratic organizations? Although this paper cannot answer this question, the context provided by governmental, private and non-profit organizations is an important one in systems analysis. If it were true that organizations tend to replicate societal patterns, and that methods of interacting within organizations mirror methods of communicating in societies, organizations could be expected to create vicious and virtuous circles internally. If so, this would help to explain the innovation adoption patterns of organizations.

The relationships here identified as motivation, organizational culture and challenge of the innovation do not stand alone in the innovation dynamic. They are influenced by factors like the process of self-regulation, sources of order, outcomes as they become a source of feedback, and the environment as it influences the organization. Hence, innovation is likely to occur in patterns similar to those already established in the organization, and possibly those already established in the society. Because the same forces are at work on the innovation, the organization and the society, innovation is imbedded in and may tend to mimic the patterns around it. Nonetheless, because innovation also involves creativity, will, change, and new combinations of patterns, unique action occurs. The amount of unique behaviour is what the innovation pattern is largely reflecting. An attempt to represent the forming of innovation patterns and the factors at work, with an emphasis on the coordinating mechanisms of self-regulation, relationships, forces for order, and outcomes, is presented as Figure 2. Of primary importance is the role of patterns: “The central characteristic of an autopoietic system is that it undergoes continual structural changes while preserving its web-like pattern of organization.” (Capra, 1996: 213.)⁴

Just as Robert Putnam (1993) found societies have consistent configurations of relationships, organizations have patterns of ways of doing things—including innovation—growing out of the dynamic interaction of individuals, organizational culture and the challenge presented by the innovation. Through the processes of competition and cooperation, creation and mutual adaptation, through life’s inherent tendency to create novelty, and in the spontaneous emergence of greater complexity and order, organisms (Capra, 1996: 222) and, this paper argues, organizations change.

EVIDENCE THAT THE PATTERNS EXIST

The rest of this paper is devoted to testing the existence and implications of the patterns. The patterns constructed in this paper suggest the factors motivation, culture and challenge can be identified and classified. Is this so?

⁴ There are two kinds of self-organizing networks, autopoietic and non-autopoietic. Autopoiesis is a network pattern in which “the function of each component is to participate in the production or transformation of other components” (Capra, 1996: 202) It has three criteria: the system is self-bounded, self-generating, and self-perpetuating (Fleischaker, 1990).

Test One: Recognition

A first test asks whether the factors and patterns can be recognized in the real world. While the distinction between intrinsic and extrinsic motivation has important implications for innovation, as discussed in this paper, one author found that it was difficult to distinguish them. Industrial and organizational psychologists, for example, could not distinguish clearly between intrinsic and extrinsic outcomes (not motivations as such) (Dyer, 1975). As a result, the utility of intrinsic and extrinsic motivation as practical tools could be in doubt. This presents a potential problem for the innovation patterns model being developed here, as the model is meant to have practical applications. On the other hand, two participants in an Innovation Salon organized by the author in April 2000, were able to distinguish intrinsic and extrinsic motivation in two case studies they developed themselves (Appendix A).

Likewise, in this first test of the innovation patterns model, these Innovation Salon participants were able to identify the motivation, culture, and challenge of the innovations they identified, and to classify their innovation's pattern. One participant was a clinical psychologist, the other was a generalist interested in population ecology, as described in Appendix A. These analysts were able to classify the three factors in the cases of innovation they identified from their own experience, and to recognize the innovation patterns suggested in this paper.

Test Two: Identifying Examples of The Patterns

A second test of whether the innovation patterns exist asks whether examples of the patterns can be found in the real world. This section presents an example of each of the patterns. Every example did not exhibit every possible criterion, but each exhibited some of them. Reactive innovation is illustrated by introduction of operating budgets in the Government of Canada, active innovation by the Our Missing Children program of Canada Customs, necessary innovation by the strategic alliance in the Department of National Defence, imposed innovation by Literacy New Brunswick, proactive innovation by the public-private partnerships data base developed by Agriculture Canada, continuous innovation by the Health Canada health promotion program, buy-in innovation by the City of Mississauga's excellence program, transformational innovation by purchase of a controlling interest in the potash industry in Saskatchewan. Appendix B identifies sources of information for the innovations while Table 1 shows which pattern each example fits.

Reactive Innovation: Introduction of operating budgets in the Government of Canada.

For many years, the Government of Canada used a line-item budgeting system in which each type of activity (e.g. salaries, travel, capital) was approved separately. In 1969 program budgeting was introduced in a variation called Policy and Program-Based System (PPBS). By 1984 it had been abandoned, and line-item budgeting was re-introduced. In the mid-1990s a variation on line-item budgeting was implemented, called operating budgets. Operating budgets permitted funds to be transferred between salary and non-salary (excluding capital) budgets. Operating budgets were introduced following a period of cost-cutting during the 1980s and early 1990s, as the government moved into a period of major cuts to government expenditures. They allowed departments more flexibility in dealing with cuts, and facilitated lay-offs and contracting-out.

Operating budgets were an initiative of the Treasury Board Secretariat, introduced in a top-down manner. TBS staff were extrinsically motivated by the need to deal with the large

government deficit and the need to give departments tools to deal with government's fiscal strategy. The operating budget innovation presented a minor challenge to staff, as it facilitated both the TBS' objective of reducing budgets and the departments' objective of dealing with smaller budgets. It did not require departmental approval. The challenges faced by staff were small and involved minor changes in power relationships, as the transfers still required Treasury Board (Cabinet committee) approval. The challenge posed by this budgeting innovation was thus minor. The impact on hierarchical relationships and the workplace were minor and changes were incremental.

Active Innovation: Our Missing Children. International Project Return, now known as Our Missing Children, was initiated by organized parents who had lost their children either as run-aways or by abduction. Abduction was often committed by a separated spouse who subsequently took the child out of the country and beyond the reach of Canadian law and resolutions of the dispute. These Canadian parents, now organized through the International Centre for Missing and Exploited Children in Alexandria, Virginia, approached Canada Customs to create a program to search for these children at borders, similar to a program already operating in the USA.

The goal of the program is to help locate abducted or missing children and return them to their proper guardians. This initiative involves the Canada Customs and Revenue Agency, the federal police (RCMP), Citizenship and Immigration Canada, and the Department of Foreign Affairs and International Trade. Over 3,500 CCRA customs officers are on the alert for abducted or missing children at international airports and land border crossings. The program is part of a network of more than 40 countries that exchange information on missing children. (Canada Customs, 2001) Canada Custom's involvement dates from 1986. By April 1999, customs and immigration officers had recovered 815 missing children, of whom 525 were runaways and 290 had been abducted. (Canada Customs, 2001)

Canada Customs was a unionized organization, with regulatory and some police-like authorities, and a role-based, top-down culture. This culture received a shock with the appointment of a non-directive woman, Ruth Hubbard, as Assistant Deputy Minister (ADM). With knowledge of the American program and the approach, but with no one telling them they must do it, and with no additional resources or compensation, customs officers responded to the request of the parents and the ADM, agreeing to take on the added responsibility of the program. The initiative was therefore extrinsically motivated but was responded to in a bottom-up manner. It presented a minor challenge since it involved minor changes to operations and incremental change and is therefore an example of active innovation not required by the environment.

Necessary Innovation: National Defence Ship Repair Unit Atlantic. Ship Repair Unit Atlantic repaired ships for and was part of the Department of National Defence (DND) of Canada. It was a role-based, top-down culture with difficult union-management relationships. The military, its broader employer, was a power, top-down culture *par excellence*. In 1991 the Repair Unit faced looming, major budget cuts and the possibility of closure of its ship repair docks in Cape Scott, Nova Scotia and Esquimalt, British Columbia. In this environment, the union leadership from the Fleet Maintenance Facility Atlantic attended a National Joint Council (NJC) meeting in Ottawa. NJC is a nation-wide, federal government staff relations council that includes in its membership senior-level central agency management and national public service union representation. At the meeting the local union leadership saw a presentation on a change

model known as a strategic alliance (Stepp and Schneider, 1995). Based on a foundation of earlier experiences working together on a quality program, the union approached management with the idea of creating a strategic labour-management alliance. Union and management agreed to do so. Together they developed strategies for dealing with a common problem—the need for substantial cost-cutting measures—and agreed to union membership on several committees, including the local Human Resources Committee. Total management control of human resources, especially staffing, and the lack of a seniority system, was a source of union-management conflict throughout the federal government. In face of ruinous problems, and despite the top-down national and local organizational cultures, management was willing to accept the union suggestion and manage in a bottom-up manner at the micro-level. The challenge faced by employees and management was major: It involved a major shift in current ways of operating and some change in power relationships.

Through agreed cost-cutting measures, union and management avoided lay-offs during the first round of cut-backs. In an environment of scarcity, the union and employees of National Defence Shipyard Atlantic chose to create both the strategic alliance and effective solutions. The alliance created a much more positive working environment that included union participation in resolution of human resources issues. While the budget cuts and eventually lay-offs were externally imposed, the partial solutions were intrinsically motivated and had a good deal of employee support. By 1999, the shipyard had dealt with a subsequent two rounds of lay-offs and faced a fourth. In the face of the fourth, union and management agreed to develop a joint form for a reverse order of merit process for lay-offs. Employee support was naturally in some cases reluctant. Despite the two earlier rounds of lay-offs, faced with a further round, and contract negotiations having just failed, union and management still maintained the alliance, and eventually agreed on a contract. The alliance held together and the shipyards did not close—the threat that had hung over the workers' heads throughout. Temporarily, at least, union and management replaced a local role culture with a local task culture—whether they have done so permanently will be revealed by the effects of a change in senior management that occurred in 1999. Ship Repair Unit Atlantic created necessary innovation.

Imposed Innovation: Literacy New Brunswick. Literacy New Brunswick was the Province of New Brunswick's response to the 1990 International Year for Literacy. In 1990 New Brunswick's primary literacy program was the federally-sponsored Adult Basic Education program for those who had not completed secondary or perhaps even primary school. Those who succeeded in the program received a secondary school diploma. Although the program was provincial, it was funded by the federal government, and federal funding for the program had been declining over the previous ten years. ABE had been taught in community colleges around the province and the country for many years, with some but limited success.

The high rate of illiteracy in the province was highlighted during the Year for Literacy. The provincial government formed the intention to improve this pattern, in the context of declining resources, a provincial deficit, and one of Canada's poorer provinces. Literacy N.B. was thus an example of innovation induced by stress. It was extrinsically motivated: The high illiteracy rate demanded a response, but additional funds were not available.

In answer, the provincial government, a top-down culture, in a top-down fashion, decided to adopt a new decentralized model for literacy training. The literacy program was transferred to the control of local non-profit agencies. These agencies, largely with the help of volunteers,

created partnerships with private sector companies, secured (usually free) space for classes, hired teachers and delivered the programs. The Province limited its role to employing program developers through community colleges and funding the instructors, at a non-professional level. All other costs were covered by the local partners. Although local literacy organizations wanted more role in literacy policy-making and delivery of programs, they had serious doubts about the approach and their added role without assured compensation. They believed that change was necessary, however, and were hopeful that the changes would create a stronger community base and involve clients more effectively. The community groups had cultures of the task, bottom-up cultures.

The new program worked very well: The number of people involved in literacy programs increased thirteen-fold and the students' results on tests went up considerably. Additional resources were brought into the program at the local level, from the private not the public sector. Through decentralization and devolution of responsibility for delivery to community agencies, Literacy N.B. converted literacy training from a top-down to a bottom-up culture. While the motivation of provincial officials in the context of the decision was extrinsic, and the non-profit agency officials' initial motivation for the change was extrinsic, the commitment of both provincial and agency officials to improved literacy was intrinsic. Implementation in this fashion was a major challenge for the public servants and the agency officials, since the agreement of numerous non-government organizations (NGOs) was required, new funding had to be found, and a new paradigm had to be adopted—literacy training had never been delivered in this way before. Pioneer College was the only similar model, being an NGO that delivered literacy training through volunteers on the job site. For public servants it involved a major shift in the current ways of operating and thinking about the government's functions and changes in power relationships vis-a-vis a group outside the government. Such changes made internally would have been even more challenging.

Proactive Innovation: Development of Agriculture Canada's Public/Private Sector Partnerships Data Base. In the early 1990s, the Government of Canada decided to create a flatter organization by eliminating ten per cent of the executive positions in the government. Under the government's Work Force Adjustment Policy, which then applied to executives and non-executives equally, staff were declared redundant and given between six months and a year to find another position. These redundant staff in the federal government were a source of slack for a number of years in the mid 1990s.

One executive in Agriculture Canada who had been declared redundant was allowed to work full-time for a year on the development of a public/private sector partnerships data base that he had earlier initiated. He secured funding through a different program and was able to recruit staff—some of them on practicum assignments from a local university—to assist him to develop and research an interactive data base. It was a unique data base at the time, when public-private partnerships were a new way of doing business for government departments. The data base provided information on good practices and was valuable to more than one department. While Agriculture Canada did not provide ongoing sponsorship for the project, a non-government organization (NGO) stakeholder of Agriculture Canada, posted the information for a time. The NGO provided space on its Internet Home Page for the data base, although the issue of keeping the data base up to date was never resolved, and the data base was removed within a few years. The executive in question spent some time at the government's management school

working on the project, and created the partnership with the NGO to post the data base on the Internet. Eventually he left the government, and went to work as a private consultant.

The partnerships data base is an example of proactive innovation. The executive was intrinsically motivated and he developed the project in a bottom-up fashion. The challenge presented to the government and the work unit by the innovation was minor, since Agriculture Canada did not adopt or fund the innovation. Any organizational credit or benefit realized from the data base went to the NGO. The challenge to the individuals involved and the NGO was also minor since it involved operational decisions, incremental change and no changes in power.

Buy-In Innovation: Mississauga's Capability Development Program. Beginning in the late 1980s, the City of Mississauga, Canada began a process of restructuring of the city administration. It explored the idea of a Total Quality Management program, but did not introduce one, instead introducing a human development plan initiated by a capability development program. Led out of the Commissioner of Human Resources' office, three staff were hired to implement this management training program and later a training program for a wider group of staff. Its purpose was to introduce a cultural shift in the city. Separately but at about the same time, the city introduced a strategic plan, a management strategy, a human resources vision, service standards, an awards program, and a re-engineering program. The City also introduced public polling about its services at this time. Satisfaction ratings went up and stayed up. Eventually the overall initiative lost steam, the head of the unit left, and although she was replaced, the initiative took a different turn, becoming a management consulting and development group, with re-engineering and human development roles.

Mississauga's program was introduced in a top-down manner, out of the office of the commissioner of human resources, but staff were enthusiastic and intrinsically motivated to improve services to the public. The capability development program put action in the hands of front-line managers and senior staff. Over time the human resources staff found it hard to continue to find ways to maintain enthusiasm on an ongoing basis. Staff did not take control of the opportunities and the program did not develop its own momentum. Separate from capability development, Mississauga introduced a customer service improvement program in its Parks and Recreation Department, public polling, a suggestion program, and a corporate awards program. As with many other suggestion programs, management implemented very few of the ideas developed by staff. The city broke down its overall effort to improve service and operations and motivate staff into small pieces by developing a number of separate programs, and thereby succeeded in keeping the challenge to a minor level. Had Mississauga faced the challenge of creating a culture of continuous improvement, this would have been a major challenge. It failed to address this challenge and instead faced the minor challenge of introducing and maintaining a capability development program for several years. Mississauga therefore addressed a minor challenge and created buy-in instead of continuous innovation.

Transformational Innovation: Saskatchewan Potash Take-Over. Following a lengthy period of negotiations with the potash industry during the early 1970s, in 1975 the Government of Saskatchewan introduced legislation that allowed it to assume ownership of potash mines. It did not use this power, but rather *purchased* slightly more than forty per cent of the industry, a controlling interest. Provincial ownership was consolidated in the Potash Corporation of Saskatchewan, a Crown corporation. The government was subsequently able to expand the industry, maintain head-office control in Saskatchewan, and introduce a number of new

initiatives such as a Work Environment Board, that involved sharing of power among workers and management.

The Premier created a Potash Secretariat in Executive Council to manage the innovation. The potash take-over was therefore done in a role-based, top-down manner. The initiators in the Premier's office had intrinsic motivation to find a way to secure better economic rents from the industry in the province, expand the industry and create head-office control. Staff in the Department of Natural Resources, the responsible line department, did not share this motivation, seeing their role as one of service to the industry. The challenge was major, involving policy and structural changes, the challenge of a major shift in the department's ways of thinking about its functions (which remained unmet), and a change in power relationships vis-a-vis a group outside the government. The result was a major change in policy and power relationships, and the impact on the industry was major.

Continuous Innovation: Health Canada's Health Promotion Program. For 25 years, Health Canada's health promotion program (HP) has attempted to introduce health promotion programs into Canada's health system. In the process, HP created a new profession, health educator. More recently it has also introduced prevention programs (health promotion programs promote good health through education while prevention programs attempt to prevent specific health problems). The Health Promotion Directorate grew out of the federal Ledain Commission's investigation of the possibility of legalizing marijuana in the early 1970s. The youth-oriented and youthful staff to the Commission were largely integrated into the Health Promotion Directorate in the mid-1970s, and their approach was institutionalized. Within the context of Health and Welfare Canada (HWC), as it was then called, this initiative followed the creation of national hospital and medical care systems in the late 1960s and early 1970s. A dynamic, politically savvy group, HP created a power base by securing sufficient funds to create an alternate health service delivery system delivered through non-profit organizations.

Over the years the directorate created a series of new programs, including high-cost advertising programs, that gave profile and credibility to health promotion, and credit to a series of ministers of two different political affiliations. Under a Liberal government from 1980 to 1984, alcohol and drug, nutrition and anti-smoking programs were created. Under Progressive Conservatives from 1984 to 1993, special short-term initiatives were created, related to specific diseases such as HIV/AIDS and Alzheimer's disease, problems like family violence, and special population groups such as children and seniors. In the mid-1980s HP became internationally known for its conceptual frameworks for health promotion. Although initial versions of programs were created under the Conservatives, once the Liberals returned to power in 1993, the priority shifted to preventive programs for children, based on a new knowledge synthesized and integrated by the Canadian Institute for Advanced Research highlighting the crucial impacts of the early years of development. With provincial (Saskatchewan) leadership, initiatives for children were expanded to include redistribution of income as well as providing community-based pre-natal and developmental programs, much like the American Head Start program, which by then was known to be effective in the long term. The HP program successfully adapted its focus to meet political needs for programs for youth, budget cuts, and a focus on the *deserving poor*.

Internally HP did not have one culture: It functioned internally and toward its clients as a culture of the task, but toward the rest of the department and the public health system, it

functioned as a power culture. Because it consistently conducted consultations with NGOs and later provinces, HP was more inclusive than most federal programs. At the same time, HP also assumed forceful leadership in determining the direction of health promotion and public health in Canada. The Directorate's strong strategic and tactical leadership, political dexterity, financial resources, community-based power base, and understanding of communications allowed it to create continuous innovation over the course of twenty-five years.

The HP program involved intrinsic motivation, a bottom-up culture vis-a-vis NGOs and a major challenge—changes in strategy and policy, in the existing ways of operating and thinking about HWC's functions, and in power relationships.

Discussion of the Examples

Drivers of Change. As in most governments over the last twenty-five years, innovation occurred in almost all of these cases in an environment of financial scarcity. Frequently innovation was driven or affected by central budget cuts, accompanied by an emphasis by central policy staff on the need to innovate and by the willingness of central staff to approve innovations when they came forward for approval. Central support was found in deputy ministers' offices, ministers' offices and central agencies. All of the governments provided some kind of central support. New Brunswick provided strong leadership from the central agencies for an innovative thrust, originating from the Premier's office. Central support was also created in the federal government, with Privy Council Office, the Department of Finance and Treasury Board providing formal guidelines about the type of innovation wanted—cost savings, privatization, alternate service delivery—and departments responding to these guidelines. An atmosphere that provided expectations for innovation but within narrow limits distinguished these centrally-driven initiatives. Health Promotion was an exception to central leadership, as it was working in one of the areas that retained public support and remained a government priority throughout the downsizing exercises. Despite major cuts to its communications and grants/contributions programs, HP retained political support through its flexibility in serving issues or target groups of concern to the governments in power, and recouped some of its funding, once the downsizing period ended in the late 1990s. Hard work, discipline and integrity of ministers and senior officials were common characteristics of leadership in these governments.

Change was driven by central agencies with introduction of operating budgets, Literacy New Brunswick, the potash take-over and Mississauga's capability development program. It was initiated at the deputy ministerial level with Missing Children, and at the directorate level in the DND shipyard and Health Promotion, . These are the three highest levels of authority in the Canadian federal government. Only once was innovation initiated at the front line, with the partnerships data base, by a former manager, not front line staff. This innovation was not retained. HP tried to be more inclusive and DND Ship Repair Yard more collaborative. The community groups in Literacy NB were highly collaborative. A positive, *can do* attitude was generally exhibited in response to both inclusive and top-down approaches, as would be expected, since these are cases of successfully implemented innovation.

Although many examples served cost-saving objectives, some examples also emphasized service to the public. A redesigned literacy program was more effective and provided better service. Customs responded to a need to trace missing children—as did Customs in the USA and other countries. A cooperative shipyard reduced the costs of its service, and functioned as a task

culture in the midst of a role culture environment. Only one case is an example of increased use of technology—the partnerships data base—although most governments have used more technology in recent years.

Importance of the Role of Individuals vs. Organizational Culture Although one case is an example of an individual innovator, none of these examples sustained individual innovators directly, by drawing on personal creativity and tacit knowledge or encouraging staff to create innovations.⁵ The Canada shipyard engaged staff through training their union representatives while Health Promotion attracted staff through the opportunity to make a difference with stakeholders who served high risk populations. Mississauga offered incentives to staff who found ways to save money and created a quality service award. The shipyard, HP, Mississauga and an individual actively problem-solved. The first three illustrated ways in which governments can successfully involve and motivate a substantial portion of employees, not just a few individuals. These three examples may suggest that governments can find ways to help staff become more effective and successful in converting their tacit ideas into explicit suggestions for improvement. None of the cases achieved the next level in an innovative culture, however, that some Japanese companies have created—continuous innovation through active and continual implementation of staff suggestions. (Nonaka and Takeuchi, 1995)

While individual motivation was essential, the culture of governments also played an decisive role in how much innovation and what type of innovation was acceptable. Both New Brunswick and Saskatchewan put in place a top-down continuous innovation culture for most of ten years. Central agencies, ministerial and senior policy staff support to innovation was essential.

Power and Innovation. When front-line support was combined with central agency and senior staff support, or when governments created innovative policy, governments effected major change, change that modified power relationships. In the ship repair yards, the partnership formed between management and employees led to real power sharing, including issues concerning personnel. This partnership has now continued for 8 years: Whether the partnership will be integrated into the organization (routinized) in the long term has not yet been determined. These results underline the difficulty of achieving changes in power: Doubtless the lower impact on hierarchical power relationships is essential to the greater ease of introducing incremental changes than major ones (as noted by Everett Rogers, 1995). The introduction of operating budgets, for example, did not change any power relationships. Innovations creating change in power relationships had more potential to make a substantial difference than those that did not.

Motivation, governmental relationship to innovation, the way innovation was introduced, and the impacts of the innovation were interrelated. Top-down reactive innovations, requested by management, had little difficulty securing approval from management and elected officials. Active innovations, on the other hand, although more novel in their character, often had more trouble getting anchored in the culture. The partnerships data base, for example, became an orphaned innovation in search of a problem to solve or a sponsor to maintain it. Depending on

⁵ Even governments that did, such as the City of Mississauga through its suggestion programs, did not solve the problem of more than 90% rejection rates of employee ideas. Its period of energetic change lasted about three years.

the level of government that was active, either securing approval or gaining acceptance in the unit responsible could be an uncertain stage in the process, because these were the innovations that changed power relationships most. Individual creativity alone and innovations without broader institutional support had limited potential for success.

These examples of innovation all required power bases. Staff that successfully motivated and/or implemented innovations in these cases used one of three power strategies—a reactive response to a centrally-driven strategy; a cooperative, bottom-up union-initiated strategy; or a client- or politically-based, outside-in strategy. The strategic alliance in the shipyard was maintained for eight years, but the effect of the retirement of the head of the shipyard in 1999 bears watching. Top-down ongoing innovation was achieved for nearly a decade in New Brunswick and Saskatchewan, but the McKenna and Blakeney governments were both less innovative at the end than at the beginning of their mandates. The change of government and loss of the Clerk/Secretary to the Executive Council to the federal government may draw this period to a close in New Brunswick: It does not appear to have become continuous innovation. Transformational change was achieved and maintained in Saskatchewan potash, too, until the government lost power. Only Health Promotion among these examples was able to create ongoing innovation across changes of government. The challenge for the future is to introduce a cultural change that creates ongoing support for innovation and for the people who are expected to implement it.

The combination of motivation and culture may have influenced the magnitude of challenge that was acceptable to public servants. For the most part, though, the challenge was defined by authority. Magnitude became a function of the combination of the nature of the objective framed and the power and will of the government to implement it. As Everett Rogers pointed out, “elites are inclined to screen out innovations whose consequences threaten to disturb the *status quo*, for such disruption may lead to a loss of position for the elite. The ‘dangerous’ innovations are often those of a restructuring nature, rather than new ideas which will affect only the functioning of the system.” (Rogers, 1995: 340) Yet the degree and duration of the change in turn often determined its impact on the public.

Impact on the Public. As might have been expected, minor challenges produced minor change in service to the public, while successfully met major challenges, in combination with organizational support, produced major change in service to the public. The innovations created in response to minor challenges were retained and became routine practice, but the fate of the major challenges was much more uncertain—they required ongoing support from champions, managers and elected officials.

Durability/longevity of innovation. Attaining enduring innovation was difficult, yet the duration of the innovative period made a big difference to how flexible and motile a government was able to be and how much change occurred. Sofer (1961) suggested that in the short run innovation can seem continuous by occurring in a chain reaction, but that viewed retrospectively innovation seems to have occurred in clusters. He identified the limited resources available to the executive as preventing the chain-reaction of innovation from continuing without end.

To Nonaka and Takeuchi, on the other hand, continuous innovation *is* possible. It is dependent on knowledge creation or learning in an environment where both the leadership and the membership of an organization have recognized the need for ongoing innovation. In this context, innovation is seen as organizational knowledge creation, in which the conversion of

tacit, personal knowledge to explicit, organizational knowledge is crucial. Translation of tacit knowledge is increased as a result of frequent communication and dialogue; strategic rotation, especially between different functions and technologies; and access to information (Nonaka and Takeuchi, 1995). It is in the midst of redundancy and ambiguity that new knowledge is created.⁶

Durability of change also had a political dimension: It seemed to be at least partially determined by the span of the government and leader in power, how different the next government was ideologically and thus whether it chose to change the relevant policy. The unsettled political arena of the 1970s-1990s made durability difficult to achieve. The span of the governments and leaders involved in these innovations is outlined in Table 2, both in terms of first ministers and public service leaders. Durability of an innovation was a function of both a capacity to make the innovation part of the government framework (institutionalize it) and to create sufficient public service and public acceptance that it became integrated (accepted as part of the culture). At times of change in dominant paradigms/ideologies, however, even long-term programs that had been previously institutionalized, routinized, and integrated, as well as recent innovations, were at risk.

⁶ To create the knowledge spiral, five conditions are required at the organizational level: intention/ aspiration to create knowledge, autonomy of workers, fluctuation and creative chaos, redundancy, and requisite variety (an organization's internal diversity must match the variety and complexity of the environment). The organizational knowledge creation process involves sharing tacit knowledge, creating concepts, justifying concepts, building an archetype, and moving the new knowledge on to a new cycle of knowledge creation at both an intra-and inter-organizational level. According to Nonaka and Takeuchi, Japanese companies have been successful because they are experts at creating organizational knowledge: they create new knowledge, disseminate it, and embody it in products, systems and services. They do so on a continual, incremental basis. "... the creation of new knowledge is as much about ideals as it is about ideas. The essence of innovation is to recreate the world, including the company and everyone in it, according to a particular ideal or vision." (Nonaka and Takeuchi, 1995)

Table 2: Political and Public Service Leadership by Government and Duration of Government

Example	Government Leader	Duration of Government		Clerk of Privy Council
		Years	Dates	
Govern- ment of Canada Province of New Brunswick	Pierre Trudeau, Liberal	11	1968-79	R. G. Robertson 1963 - 1975 P. Michael Pitfield 1975 - 1979
	Joe Clark, Progressive Conservative	<1	1979-80	Marcel Massé 5 June 1979 - 10 Mar 1980
	Pierre Trudeau, Liberal	4 yrs	1980-84	P. Michael Pitfield 1980 - 1982 Gordon F. Osbaldeston Dec 1982 - Aug 1985
	John Turner, Liberal	< 1yr	1984	Gordon F. Osbaldeston Dec 1982 - Aug 1985
	Brian Mulroney, Progressive Conservative	9	1984-93	Gordon F. Osbaldeston, Dec 1982 - Aug 1985; Paul M. Tellier, Aug 1985 - June 1992; Glen S. Shortliffe, July 1992 - Mar 1994
	Kim Campbell, Progressive Conservative	< 1 yr	1993	Glen S. Shortliffe July 1992 - Mar 1994
	Jean Chretien, Liberal	8	1993-?	Jocelyne Bourgon Mar 1994 - Jan 1999 Mel Cappe Jan 1999 - ?
	Frank McKenna, Liberal	10 years	1987 to 1997.	<i>Clerk of the Executive Council</i> Claire Morris
	Raymond Frenette Camille Thériault	2 yrs	1997-99	Claire Morris
	Bernard Lord, Progressive Cons.	2yrs	June 1999-?	Jean-Guy Finn

Province of	Allan E. Blakeney, NDP	11 years	1971-82	<i>Cabinet Secretaries:</i> Gerry Wilson, Wes Bolstad, Carleton Mitchell, Florence Wilkie. <i>Clerk of Executive Council:</i> John Kinzel, Roy Borrowman, Edward Heinrich, Shirley Strutt, R. Borrowman, E. A. Heinrich, Donard Grant McMillan, Philippe Dore, Carole Bryant, Florence Wilkie, Robert Weese.
Saskatchewan	Grant Devine, Progressive Conservative	9 years	1982-1991	<i>Cabinet secretaries:</i> Derek Bedson, Gren Smith Windsor, Norman Riddell, Larry Martin, Stan Sojonky. <i>Clerk of Executive Council:</i> Gren Smith Windsor, Elizabeth Crosthwaite, Larry Martin, Ron Hewitt, Lynn Minja.
City of Mississauga	Hazel McCallion, Mayor	22	1978-present	<i>Chief Administrative Officer:</i> Ed Halliday, Doug Lychak, Stan Spencer, David O'Brien (<i>City Manager</i>)

Sources:

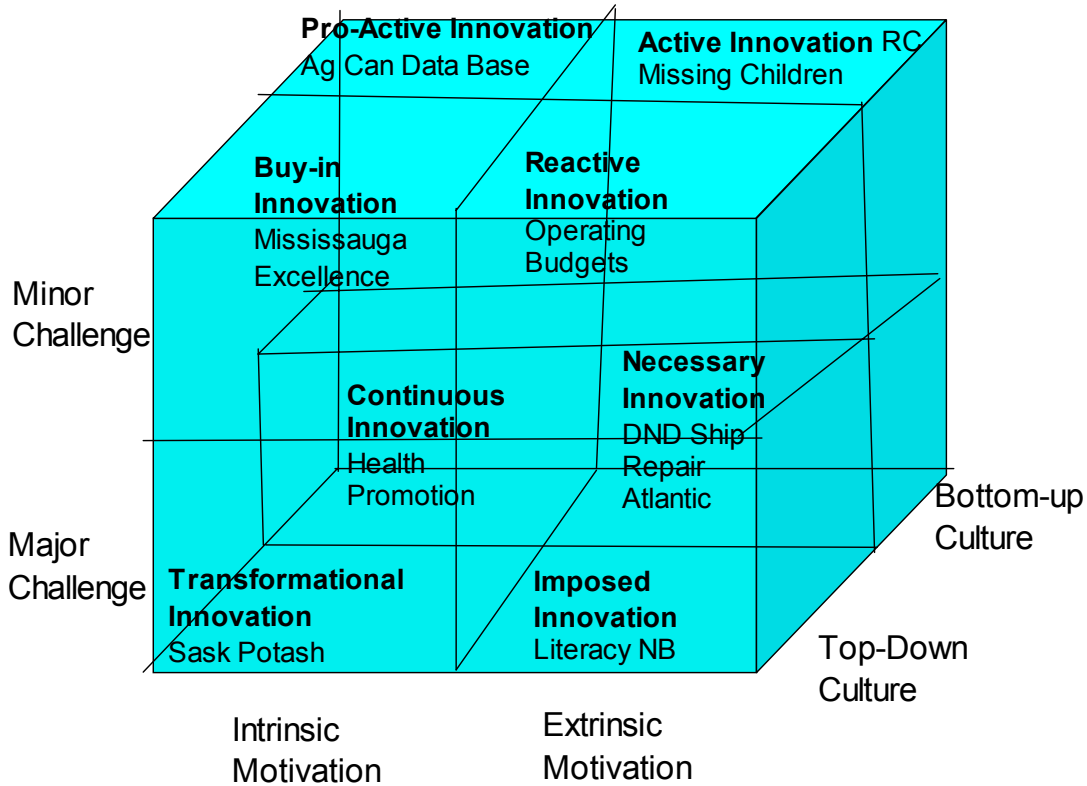
Government of Canada Privy Council website at: http://www.pco-bcp.gc.ca/clerk/clerks_e.htm

Government of New Brunswick, Premier's Office

Government of Saskatchewan, Premier's Office

Individual motivation, magnitude of challenge, and whether the innovation was allowed to become integrated were important for the innovation's durability. Management was also important not just in implementing individual innovations and reinforcing long-term support for innovation, but also in influencing the organizational culture. The predominant pattern of change management in the cases studied was top-down. No examples of truly bottom-up cultures in the public service were discovered in this research. As a result, examples were used where the action in the particular instance or in certain kinds of situations was bottom-up. The loss of individual initiative and intrinsic motivation inherent in the top-down approach has a cost in innovation foregone. Figure 3 interrelates the dimensions of motivation, organizational culture and challenge to form a visual image of the eight types and the eight examples of innovation.

Figure 3: Examples of Innovation Patterns, Based on Source of Motivation, Organizational Culture and Magnitude of Change



Test Three: Distinguishing the Processes and Outcomes

For a third test of the innovation patterns, this section explores whether the different patterns can be shown conceptually to have different processes and outcomes and whether these differences can be recognized in reality. If the innovation patterns exist and are different from each other in meaningful ways, what does this mean for the processes and outcomes of the innovations? Do different patterns differ on these dimensions? An attempt is made to distinguish conceptually among the eight innovation patterns in terms of their processes of creativity and implementation, and their outcomes. Two examples are analyzed in these terms. Based on a systems analysis of the patterns, an explanation is offered for why these differences might occur.

The Creativity of Innovations. The creativity of innovations proposed and adopted by an organization and how different the innovations are from existing reality determine the range of options that are considered by an organization. It is likely that the more options considered, the better the innovation in terms of its fit with the organization and its capacity to deal with the problem or issue being addressed. The creativity of innovations is considered a function of the number of ideas proposed (Basadur, 1994) and the variability of the ideas put forward for consideration.

The combination of extrinsic motivation and a top-down culture with an innovation that presents a minor challenge–reactive innovation–will likely produce few ideas for change and little variability of ideas. If the challenge is somewhat higher–imposed innovation–then the ideas may increase in variability. Extrinsic motivation combined with a bottom-up culture and a minor challenge–active innovation–would likely produce low to medium numbers of and low variability of ideas. Extrinsic motivation combined with a bottom-up culture and a major challenge–necessary innovation–would likely produce a large number of ideas but medium or even low variability of ideas. Intrinsic motivation in conjunction with a bottom-up culture and a minor challenge–proactive innovation–would likely produce medium/high numbers of ideas but low variability of ideas, while intrinsic motivation combined with a top-down culture and high challenge–buy-in innovation–would more likely produce low numbers of ideas and low variability of ideas. Intrinsic innovation combined with a bottom-up culture and major challenge–continuous innovation–would produce high numbers of ideas, high variation from the current situation, and large and small variation among the ideas. Intrinsic motivation combined with a bottom-up culture and high challenge–transformational innovation–would probably produce large numbers of ideas, ideas with high variation from the *status quo*, but little variation among them. Thus the most change would likely come from continuous and transformational innovation. Table 3 summarizes the creativity of each pattern.

Table 3: Predicted Pattern of Level of Creativity of Innovations

Innovation Pattern	Motivation	Organizational Culture	Magnitude of Challenge	Creativity	
				# of ideas	Variability of Ideas
Reactive	Extrinsic	Top-down	Minor	Low	Low
Imposed	Extrinsic	Top-down	Major	Low	Medium
Active	Extrinsic	Bottom-up	Minor/ Medium	Low- Medium	Low
Necessary	Extrinsic	Bottom-up	Major	High	Medium-low
Proactive	Intrinsic	Bottom-up	Minor	Medium- high	Low
Continuous	Intrinsic	Bottom-up	Numerous, minor, medium, high magnitude	High	All kinds
Buy-in	Intrinsic	Top-down	Minor	Low	Low

Transformational	Intrinsic	Top-down	High	High	High variation from status quo. Low from each other.
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The Implementation Environment. The patterns emphasize whether the initiative for change is intrinsically motivated, originating from within the work unit or the individual, or extrinsically motivated, originating from above in the hierarchy/from the outside—with new actors and factors impinging on staff to encourage or force them to change. People who are pushed or forced to change are rarely committed to that change in a fundamental way. In organizations where extrinsic motivation is dominant, therefore, change is not likely to be well accepted. As a result, the change does not have an easy time becoming routinized. Change and innovation that are introduced from within, concomitantly, have a much easier time. Sometimes innovation initiated from within leads to less change, but not always. But front line initiatives often lack central support and therefore have difficulty getting approved.

A dilemma inherent in innovation thus becomes apparent: While reactive and buy-in innovation produce fewer new ideas, less variation within the ideas and less cultural support to innovators, the innovations are easily approved, implemented and integrated. Active and proactive innovation, on the other hand, produce more ideas, but they are still of little variability from the status quo, and the culture does not support the innovators: The innovations that are suggested are well accepted in the local work unit, but are not well accepted in the larger organization, because they lack the support of senior management.

Necessary and imposed innovation have mixed support. Created through extrinsic motivation, necessary innovation is easily approved, but it has trouble getting implemented, the centre supports the innovations, but the environment does not support innovators and the innovation is not easily integrated in the workplace. Imposed innovation receives easy approval and has high support from the centre, but does not support innovators and is not easily implemented or integrated.

Only two types of innovation both engage the individual and create major challenges to the status quo. Transformational innovation produces many ideas, with the highest level of variability from the usual ways of doing things, but the ideas tend to be *of a kind*. The culture provides some support to innovators, accepts changes and readily implements them, but integration is often difficult. This can be the most ideological of the environments. Only continuous innovation—intrinsically motivated, consistently addressing minor challenges, addressing some major changes, in a bottom-up culture—engages the individual, the collectivity and its management. It creates an environment in which many new ideas are brought forward, some of which vary considerably from the usual answers, yet cultural support to innovators is high. The innovations are generally well received, easily implemented and routinized, because they grow from within the culture. Table 4 suggests the implementation environment for each type of innovation, in terms of ease of approval, implementation and integration, support to innovators and central support to innovation.

Table 4: Predicted Pattern of Implementation of Innovations

Pattern	Ease of Approval	Ease of Implementation	Support to Innovators	Central Support to Innovations
Reactive	High	High	Low	Low
Imposed	High	Low	Low	High
Active	Low	Low	Low	Low
Necessary	High	Low	Low	High
Proactive	Low	Low organizationally, high locally	Low	Low
Continuous	High	High	High	High
Buy-in	High	High	Low	Low
Transformational	Medium-High	High	Medium	High

Outcomes: Integration, Fate and Impact of Innovations. Much innovation fails. The discussion of the implementation environment above suggested some of the steps in implementation that are most likely to fail for each pattern. On the basis of the patterns and their implementation environments, it is possible to identify likely integration patterns, fates and impacts of the patterns. Table 5 outlines these outcomes or, described from the perspective of the practitioner, it describes the outcome challenges.

Table 5: Predicted Outcomes: Pattern of Integration, Fate and Impact of Innovations

Pattern	Ease of Integration	Fate	Social Impact
Reactive	High	Adopted, little carryover	Low
Imposed	Low	Dubious	Low
Active	Low	Death	Low
Necessary	Low	Dubious	Low/High
Proactive	High locally Low organizationally	Adopted	Low
Continuous	High	Adopted, carryover	Medium/high over time
Buy-in	Low?	Dubious	Low
Transformational	Low	Dubious	High

Reactive innovation is likely to be successfully implemented but have little impact, because it has not engaged staff and has little carryover to other issues, approaches, or organizational power relationships. Imposed innovation may not be successfully implemented, since it is likely to create resistance in staff, and the impact is thus low. It can, however, have a major impact, if the centre insists. While active innovation has support at the front line, it does not have the support of management and is thus not likely to be approved. Necessary innovation, while it secures approval, has little support at the front line and thus has a dubious future and little impact. Proactive innovation, too, has trouble getting management approval and the impacts are small. Buy-in innovation has the opposite problem: it secures approval and is easily implemented, but lacks front-line support. Transformational innovation has management support and substantial front-line support. Since it is a top-down culture, a big change can be achieved, but it may lack front line and even public support. While it will probably be successfully implemented, and is likely to have a high impact, the innovation may lack durability: While the innovation has a high impact on power relationships, in a democracy it may not last. Only continuous innovation has both management and front-line support and is likely to be both successfully implemented *and* have a medium impact and sometimes, overall, a substantial impact. It is not likely to affect power relationships, however.

As have other authors (Kanter, 1977; Lowe, 2001; Bandura, 1997; Glor, 2001b), the

patterns point to the benefits for innovation of bottom-up cultures and intrinsic motivation. Where a consensus to change has been achieved between front line staff and senior management, substantial change can occur. Strebel (1996) describes this as renegotiation of the personal compact. If some patterns can create major change, why is that?

Verifying the Patterns of Creativity, Implementation Environment and Outcomes

This conceptual analysis of the innovation patterns has suggested that relatively consistent patterns were likely to flow from the patterns in terms of creativity, implementation environment and fate of the patterns, and that the patterns were likely to vary in terms of the amount of change that would occur. Can these suppositions be verified in a third test of the patterns? Unfortunately, insufficient information is available from the examples of the innovation patterns studied to determine the creativity, implementation environment and outcomes of these innovations. Empirical and analytic evidence can, however, be brought to bear.

In order to test the notion that patterns differ in their creativity, implementation environment, and outcomes, the concepts must be operationalized. For these purposes, creativity is defined as the number of ideas (low, medium, high) considered in the innovation development process and the variability (low, medium, high) among the kinds of ideas considered. The implementation environment is defined in terms of five factors as: ease of approval (low, medium, high), ease of implementation (low, high), ease of integration (low, high), support to innovators (low, medium, high), and central support to innovations (low, high). Outcomes are defined as the fate of the innovation, i.e., what happened to it (adopted, dubious–still surviving but future not looking positive, death) and its impact (low, medium, high).

Empirical evidence. One test of the thesis that outcomes vary with the patterns is whether people can see and analyze innovations in these terms. The participant-observers in two innovations studied at an Innovation Salon also attempted to identify and classify the creativity, implementation environment and outcomes for the innovations studied. The participant-observers were successful in doing so. Appendix C presents a summary of their analyses.

A Systems Analysis of the Patterns. Radical change is not common in either nature or organizations. The theory of evolution as outlined by Charles Darwin assumed that change occurred in nature as a process of continuous, incremental change from a lower, simpler, or worse to a higher, more complex, or better state (Merriam-Webster Dictionary). Eldredge and Gould (1972) and Gould (1989) found that the fossil record indicated sudden and sometimes catastrophic change occurred periodically, but reinforced the idea that this was an unusual occurrence. The overall pattern they called punctuated equilibrium. In humans and in human organizations major change is not common, but does occur. This pattern of relationship to change is reflected in the patterns of innovation developed here. While overall the environment created in organizations is one of dynamic balance, the alignment and consistency of intention required to create either near-perfect equilibrium or continuous innovation does not happen very often.

In systems analysis in the biological sciences, the character of the feedback loop is treated as a causal factor for whether a system becomes either self-balancing or self-reinforcing. Self-balancing systems create dynamic balance, while self-reinforcing systems create virtuous or vicious cycles. A systems analysis of the innovation patterns helps to describe why this is the

case. Based on a modification of the methodology outlined by Capra (1996: 56-64), a final test of the concept of patterns was conducted. The systems analysis of the eight innovation patterns is then used to suggest an explanation for the proposed outcomes.

The three dimensions used to create the eight innovation patterns were analysed in terms of their alignment (Table 6), with a steady state as the baseline, consistency of alignment represented by a plus (+) and imbalanced alignment represented by a minus (-). A fully consistent alignment, that is with all three relationships pushing in one direction, only occurs in the case of reactive and continuous innovation, the pattern that is the most stable and the one that creates the most change, respectively.

Table 6: Systems Analysis of the Feedback Loop/Fate of Innovation Patterns

Innovation Pattern	Motivation	Culture	Magnitude of Challenge	Feedback Loop Self-Balancing or Self-Reinforcing?	Possible Reason for Fate
Reactive	Extrinsic +	Top-down +	Minor +	+ Self-Balancing	Maintains balance as is.
Imposed	Extrinsic +	Top-down +	Major -	- Self-Reinforcing	Extrinsic motivation & top-down culture cancel each other out, major challenge takes precedence.
Active	Extrinsic +	Bottom-up -	Minor +	- Self-Reinforcing	Impact of bottom-up culture is toward change.
Necessary	Extrinsic +	Bottom-up -	Major -	+ Self-Balancing	Bottom-up culture and major change cancels out extrinsic motivation and assures balanced movement toward change.
Proactive	Intrinsic -	Bottom-up -	Minor +	+ Self-Balancing	Intrinsic motivation and bottom-up culture reinforce each other toward change, but change is minor.
Continuous	Intrinsic -	Bottom-up -	Major -	- Self-Reinforcing	All three patterns line up toward innovation and potentially unbalances organization.

Buy-in	Intrinsic -	Top-down +	Minor +	- Self-Reinforcing	Top-down culture and minor change assure no fundamental change occurs but intrinsic motivation unbalances.
Transformational	Intrinsic -	Top-down +	Major -	+ Self-Balancing	Top-down culture protects power even though motivation and magnitude of challenge have aligned for change.

Source: Frijof Capra. 1996. *The Web of Life: A New Synthesis of Mind and Matter*. London: HarperCollins, pp. 56-64.

+ = moves organization in equal direction, defined here as a steady state, not in the direction of innovation.

- = moves organization in opposite direction, defined here as in the direction of innovation.

Character of the feedback loop:

Self-balancing (-) if it contains an odd number of negative links.

Self-reinforcing (+) if it contains an even number of negative links.

With outcomes becoming inputs for the next cycle of innovation, and creating reinforcement for the patterns, self-balancing or self-reinforcing feedback loops develop that are crucial in determining whether innovations cancel each other out, causing innovation in an organization to have minimal impact or fail, or create the capacity for ongoing innovation. By distinguishing self-balancing from self-reinforcing feedback loops in the innovation patterns, the analysis identifies the stability of the patterns and suggests that the stability has an impact on its fate.

One of the striking things about four of the eight innovation patterns is their lack of coherence or self-reinforcement: The mixed factors composing them tend to cancel out their effects, making them self-balancing. The power that can be brought to bear through a top-down culture, for example, is in part cancelled out by the extrinsic motivation in imposed and active innovation. The conflict between intrinsic motivation and a top-down culture and between extrinsic motivation and a bottom-up culture cancel each other out in active, necessary, buy-in and transformational innovation. Only in imposed, active, continuous and buy-in innovation were motivations and organizational culture aligned to form self-reinforcing patterns. In active and buy-in innovation, however, the challenge is minor and the change is not likely to be substantial. In imposed and continuous innovation, on the other hand, the challenge is major, and substantial changes might be expected.

Feedback loops are a mechanism for maintaining balance, so a self-reinforcing feedback loop is disruptive to the balance. For proponents of innovation, on the other hand, a self-reinforcing loop is seen as a positive thing. At the same time a self-reinforcing loop can be seen

as a risk to those who hold power in an organization and sometimes to its members. Beyond the effects on individuals, the most worrisome risk with a self-reinforcing loop is that it will become a vicious circle instead of a virtuous circle. The self-reinforcing patterns—imposed, active, buy-in and continuous innovation—would have this risk. Analysis of the feedback loops of the innovation patterns has supported the suggestions about the impacts and fates of the patterns.

CONCLUSION

The model presented is concerned with how the relationships among individual motivation, organizational culture and magnitude of challenge interact in an organization to form innovation patterns. Motivation speaks to inputs, culture addresses the environment, while the magnitude of challenge addresses risk for the people in the organization. Top-down, extrinsically motivated, low risk environments give the appearance of attempting to create closed systems. Bottom-up, intrinsically motivated, high risk environments appear to be opening their system to the outside environment.

Innovating governments are not all the same: Individual motivation, organizational culture, magnitude of challenge, longevity of innovations and willingness to change power relationships vary. While the reactive Liberal New Brunswick innovator introduced incremental innovations at the governmental level and major change at the community level, and the reactive Our Missing Children project stayed within its role-based paradigm, the active shipyard innovation introduced major, ground-shifting cultural change. Health Promotion created many programs, on an ongoing basis, that challenged power relationships within the department and in the community. When successful, it supported the organization's objectives, helped to change them, and gradually changed power relationships within the public health system if not vis-a-vis the medical and hospital systems. HP developed the capacity to secure the commitment of a wide range of staff and partners to innovation through the process of engagement. It did not, however, learn how to convert personal, tacit knowledge to explicit, organizationally- and generally-beneficial knowledge. This conversion skill was perhaps emergent in the shipyard, but none of the examples, including the Mississauga program that had a formal suggestion program, found a successful means to implement staff ideas on a broad basis. These eight examples have demonstrated that the innovation patterns identified analytically have in fact been created in Canadian governments over the past twenty-five years.

An idea is not an innovation—an innovation does not exist until it has been successfully implemented. Long-term survival of an innovation depends on its becoming routinized and when necessary institutionalized, and is bound up with the political climate. Although public servants cannot initiate all innovations, they do initiate some and could initiate many more, given the right climate. The impact and fate of these patterns would be an appropriate next issue for consideration.

Reactive, imposed, active, necessary, proactive and buy-in innovation generally produce low creativity and minor impacts. When high creativity and major impact occur, they usually do so in one of three ways—through use of power from the centre; through ongoing, cumulative changes that produce a continuous impact; or through discontinuous, large leaps, similar to Ainsworth-Land's (1986) non-linear change and Eldredge and Gould's (1972) punctuated equilibrium, that produce a transformational impact.

The advantage of a model that integrates motivation, environment and magnitude of

challenge is that it points to where an organization may have problems, and in which of these three domains it may need to act in order to encourage innovation. Proponents of an innovation that observed their governments following a reactive pattern might, for example, choose to take a more bottom-up approach and to assume bigger challenges. A systems analysis further hones an understanding of why this happens: only imposed, active, buy-in and continuous innovation produce self-reinforcing feedback loops. The others are self-balancing, and the factors involved cancel each other out. This analysis also makes clearer why so many innovations eventually disappear, despite being introduced with enthusiasm, while others reinforce the creation of innovations. Only self-reinforcing feedback loops, creating virtuous circles, are likely to continue.

The purpose of this model building is to help generate discussion and theory-building about the major factors at work in innovation. A number of hypotheses have been suggested.

Further research should focus on analysing additional cases to confirm the existence of each pattern and to address whether the patterns are different in their outcomes. The research should ask whether the predicted outcomes were in fact found, and whether it is possible to pinpoint a specific domain or domains—motivation, culture or magnitude of challenge—where intervention was most needed and most effective in encouraging innovation. Do the patterns affect how the organization approaches the decision to implement, and the implementation process? Are patterns reflected in patterns in terms of consistent kinds of problems addressed and impacts of the innovations? Do patterns predict the creativity of innovation? What about outcomes and domains for intervention? Do the outcomes growing out of these relationships and processes also form patterns? Additional analysis should also explore whether the three factors suggested are actually along continua. If so, should this be accommodated within the patterns, or should additional patterns be added, thus increasing complexity? As well, is one dynamic—personal motivation, organizational culture, or challenge—more important than another in innovation? Auxiliary inquiry should examine the balance of importance of the factors.

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Appendix A: Two Applications of the Model

Case 1: Response to Restructuring: Psycho-Social Rehabilitation

The Royal Ottawa Hospital (ROH) is a psychiatric hospital, owned by the Government of Ontario, Canada. During the late 1990s the Government announced a major restructuring of hospitals in Ontario, closing many, and changing the mandates of a large number of those remaining. As part of restructuring at ROH, Interactive Staff Training (IST) was introduced. This innovation is a new model of staff training that incorporates principles of organizational change, developed by organizational psychologists and others, to assist mental health programs to initiate use of verified psycho-social techniques to “rehabilitate” their severely mentally ill clients. The approach is innovative because programs are the focus of education, rather than individual staff members. An animator encourages each program to develop its own Psycho-Social Rehabilitation (PSR) approach.

IST at the ROH was innovative in three ways: This is the first application of IST in Canada; the whole hospital was targeted for training, not just one or two programs; and IST is being delivered by internal hospital staff whose expertise in psycho-social rehabilitation, derived from running a rehabilitation unit with resident beds for fifteen years, ready them to be trained as trainers. Until now, the IST model has been delivered by the outside experts⁷ who developed the technique.

Perspective 1: The point of view of those who chose the innovation. The stand-alone psycho-social rehabilitation treatment unit (PSRU) of the ROH is disappearing, and has been charged with a new developmental mandate of changing overall hospital culture and service. Its members are extrinsically motivated: This project was thrust upon them by senior hospital management and was presented as something they must do. Management encouraged staff to recognize why the change would be in their interest, and how it supported their personal values. Within the rehabilitation work group, the organizational culture and management style is bottom up: Teamwork is emphasized, important decisions are made collectively, and within-program innovations had previously been developed by committed staff using (limited) *slack* (proactive innovation). The challenge presented to the work group, and indeed the challenge faced by the entire organization is major. The PSRU is losing its clinical base (its unit will close) and confronting a major change in its role. In the hospital at large, many specialty programs are shifting from acute service to long-term service. Most of the children’s service is being transferred to another hospital. Forensic service needs to accommodate a major expansion. The ROH has a new regional mandate for eastern and northeastern Ontario, instead of a more local mandate: The entire Brockville Psychiatric Hospital will come under the governance of the ROH, and its staff need to be integrated into the ROH. The introduction of PSR work groups was *necessary innovation*.

Perspective 2: The rest of the hospital programs. IST is being delivered in all seven programs in the hospital, with a goal of introducing rehabilitation approaches in all of them. Each program is relatively autonomous. Although all are responding to extrinsically motivating restructuring demands, and all face major challenges, several of these services have top-down

⁷ Patrick Corrigan of the Centre for Psychiatric Rehabilitation, University of Chicago delivered the staff training. The Centre previously delivered IST in 75 settings to 1000 staff.

organization cultures and management styles, while a few have bottom-up cultures. Hence the PSRU is trying to influence other programs, some of which may experience the process as a *necessary innovation*, but most of which will probably experience IST as *imposed innovation*. Source: Ron Bell, psychologist, Psycho-Social Rehabilitation Unit, Royal Ottawa Hospital.

Case 2: Timesharing System for Meetings: A self-moderating and facilitating tool

The innovation is a technique for allocating time in meetings, in order to democratize participation—that is, to enhance participation by members who normally participate less than others and to control the participation of those who tend to dominate meetings. Time is allocated to participants through tokens representing time; for example, poker chips, beads, Monopoly money. Participants must use their tokens in order to speak, and must remain silent once their tokens have been used, unless other participants give them additional tokens to use. The technique is related to the *talking stick* used by aboriginal peoples in North America. Anthony Judge, the innovation's designer, has written about it on Internet at <http://www.uia.org/uiadocs/time.htm>

Use with Union of International Associations. The timesharing system innovation was originally developed in Brussels by employees of the Union of International Associations. The Union has thousands of members worldwide. The small (three or four) top-down staff facilitate membership meetings, and other meetings on a variety of topics. The Union is designed around an egalitarian and cooperative philosophy. The leader-educators running meetings adhere to the system if sitting at the table. They circulate and aid communication between people from different cultures and primary language groups. The designers were intrinsically motivated. Because the innovation involved incremental change and the process did not change power relationships, staff did not anticipate the innovation would present much challenge (challenge was minor). Its pattern was therefore *buy-in innovation*.

Use with New Hampshire Citizens for Sustainable Population. This technique was used during a retreat day for a small NGO, the New Hampshire Citizens for Sustainable Population. Eight people participated. The organizational culture was bottom up in nature, although some members were perceived to be—and some actually were—more experienced and educated than others. A few had graduate degrees. The culture of NHSUSPOP was rather provincial and middle class rural American, yet all were environmentally concerned. There was no resistance to trying the suggestion to adopt the timesharing system, and the group seemed to enjoy the procedure. The co-leaders adhered to the system when sitting at the table.

The motivation of the co-leader who suggested using the technique was intrinsic, to generate greater participation by members who were less talkative. It was expected to yield more useful ideas for the future of the organization. The results were probably not significantly different than had the system not been utilized, but that judgement is due to the generally cooperative nature of the group. The challenge was minor. The pattern was *proactive innovation*.

Source: Steven Kurtz, co-leader of NHSUSPOP process.

Appendix B: Sources for Eight Innovations

Most of the innovations were selected from among a larger group of 14 innovations studied and from which these concepts were developed (1997). The eight innovations were introduced in four Canadian governments at the federal, provincial (2) and municipal levels. Sources of information were written articles, speeches and private conversations with practitioners. The issues examined were motivation, the culture of the organization, the change model/pattern that seemed to describe that innovation best, and the impact the innovations had.

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Appendix C: Analysis For Two Cases

Case 1: Royal Ottawa Hospital: The Case of Psycho-Social Rehabilitation

Perspective 1: The point of view of those who chose the innovation

Creativity, Fate, Impacts: The creativity shown in adopting the rehabilitation model throughout the hospital and by the PSR unit in disseminating it was fairly high. Staff of the PSR team are being quite creative in their approaches to other units of the hospital. The fate and impacts of the innovation are not yet known, as the project is in its early stages. The head of the Rehabilitation Unit resigned, however, perceiving the loss of the Rehabilitation Unit as a loss of power and potentially, if the dissemination strategy did not work, as the loss of the most progressive and effective strategy and unit in the hospital.

Perspective 2: The rest of the hospital programs

IST needs to be delivered in all seven programs in the hospital, with a goal of introducing rehabilitation approaches in all of them. Each program is relatively autonomous. Although all are responding to extrinsically motivating restructuring demands, and all face major challenges, several of these services have top-down organization cultures and management styles, while a few have bottom-up cultures. Some of the programs will experience the process as a *necessary innovation*, but most of them will probably experience IST as *imposed innovation*.

Implementation. The interplay of these two situations will probably influence the pattern of success the PSR team experiences in employing interactive staff training, as the essence of this approach is to create a bottom-up culture to grow PSR in a user-friendly manner. Where the adoption of the PSR program and approach is seen as a necessary innovation, implementation will be easy, but where it is seen as imposed, implementation will not be easy.

Creativity. Because the ROH is an early adopter, not an initiator of the innovation, the creativity involved in its conception cannot be assessed in this context. The creativity that staff show in implementing the innovation can be expected to vary between units according to whether they perceive the innovation as imposed or necessary.

Fate, Impact. It is not yet possible to say what the fate or impact has been.

Source: Ron Bell, psychologist, Psycho-Social Rehabilitation Unit, Royal Ottawa Hospital

Case 2: Timesharing System for Meetings: A self-moderating and facilitating tool The innovation is a technique for allocating time in meetings, in order to democratize participation—that is, to enhance participation by members who normally participate less than others and to control the participation of those who tend to dominate meetings. Time is allocated to participants through tokens representing time; for example, poker chips, beads, play money. Participants must use their tokens in order to speak, and must remain silent once their tokens have been used, unless other participants give them tokens to use.

Use with Union of International Associations. The timesharing innovation was originally developed by employees of the Union of International Associations, based in Brussels, with thousands of members worldwide. It had a small—three or four—top-down staff who facilitated membership meetings, and other meetings on a variety of topics. The Union was designed around an egalitarian and cooperative philosophy. The designers were *intrinsically motivated* and the organizational culture was *top-down*. The leader-educators running meetings

adhered to the system if sitting at the table. They circulated and aided communication between people from different cultures and primary language groups. Because the innovation involved incremental change and the process did not change power relationships, staff anticipated the innovation would present a *minor challenge*. Its pattern was therefore *buy-in innovation*.

Creativity, Impact, Fate: No information is available on the options considered at the time the innovation was developed. The impact when used was positive. It accomplished its objectives, but was somewhat cumbersome to use. The method did not become widely discussed or used in the Union of International Associations, nor elsewhere.

Use with New Hampshire Citizens for Sustainable Population. The technique was used during a retreat day for a small non-government organization, the New Hampshire Citizens for Sustainable Population. Eight people participated. The organizational culture of NHSUSPOP was *bottom-up*. There was no resistance to trying the suggestion to adopt the timesharing system, and the group seemed to enjoy it. The co-leaders adhered to the system when sitting at the table.

The motivation of the co-leader who suggested using the technique was *intrinsic*, to generate greater participation by members who were less talkative, and to yield more useful ideas for the future of the organization. The results were probably not significantly different than had the system not been utilized, but that judgement is due to the generally cooperative nature of the group. The challenge was *minor*. The pattern was therefore *proactive innovation*.

Creativity, Impact and Fate: Little creativity was shown in the adoption of this innovation. It was implemented in a manner very similar to the original model. Some value was added, in the opinion of the group, and there were no complaints about the process. It was not used again, however.

Overall Impacts: The Union's and the NHSUSPOP's experience indicate that these meetings, when functioning smoothly, were more animated and fertile than those utilizing traditional methods of facilitation. In an international meeting with a large diversity of participants, inhibitions were lowered as expected, and celebrities didn't fight the systemic restrictions. The participants in NHSUSPOP group were well known to each other and had a common humane, educational motivation, and no trouble working together.

Current state of development: The method is not widely discussed or used. "Round Tables", a type of precursor, became widely used in many countries, and persist today. Perhaps the fact that this technique is operationally demanding has impeded its development. The shape of a round table is a static format; this is an ongoing, intentional process.

Source: Steven Kurtz, co-leader in the NHSUSPOP process

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