

Innovation and Innovators Inside Government: From Institutions to Networks

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Innovation and innovators inhabit an institutional space, which is partially defined by formal positions and partially by informal networks. This article investigates the role of politicians and bureaucrats in fostering innovation inside government and provides an empirical explanation of who the innovators are, whether this is mostly an attribute of position or role, or mostly an effect of certain forms of networking. The study uses original data collected from 11 municipal governments in Australia in order to define and describe the normative underpinnings of innovation inside government and to show the importance of advice and strategic information networks among politicians and senior bureaucrats (n = 947). Social network analysis is combined with conventional statistical analysis in order to demonstrate the comparative importance of networks in explaining who innovates.

Innovation occurs in a particular type of institutional space, which is defined by perceptual outlooks, structural positions, and informal networks. It has come to be seen as a defining value of both economic and political development in the global era. It is not difficult to see why this should be the case in a context where revolutionary new technologies and novel organizational methods are the subject of competition among the world's leading corporations. At a somewhat less visible level, innovation has also helped frame issues and priorities within the public sectors of many developed countries over the last decade. Many of those leading public management reforms identify innovation as a primary goal. For example, Mulgan and Albury (2003, 2), working in the Prime Minister's Strategy Unit in the United Kingdom, argue that "innovation should be a core activity of the public sector: It helps . . . improve performance and increase public value." The Australian Public Service reform program of the late 1990s also made much of the innovation objective, claiming its major achievements "entailed a focus on performance and on taking opportunities for continuous improvement through innovation and trying new ideas" (MAB 1995, 1). The Canadians made innovation a key objective in the reform process known as PS:2000 and "hoped to see innovation

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Governance: An International Journal of Policy, Administration, and Institutions, Vol. 20, No. 4, October 2007 (pp. 581–607).

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bring about enhanced efficiencies and improved productivity" (PPF 1998, 1). The United States enjoyed a similar enthusiasm for innovation inside government under the Clinton administration, with innovation laboratories forming a key part of Al Gore's reinvention program (Ingraham, Thompson, and Sanders 1998).

Of course the decision to frame issues of organizational reform and policy change as questions of innovation is itself a contextualizing act with its own legacies and debts. Many of the most important questions of agency and structure which are contested in the literatures on historical institutionalism, neoinstitutionalism, and rational choice institutionalism (Barzeley and Gallego 2006; Considine 2005; Hall and Taylor 1996) also find their way into innovation research. So too do the distinctions found in the policy studies field between change processes which are inspired by endogenous or exogenous events, conflictual or consensual relations between actors, and forms of routine behavior which suggest a local "culture" with a disposition for reform or resistance.

A central task in examining innovation in this public and political context is to disentangle expectations and claims about the various constraints on, and opportunities for, innovation inside government. Is there anything at all to be learned about public innovation from the now considerable research literature on private innovation? If so, who are the entrepreneurs, venture capitalists, investors, first-adopters, and diffusion agents in the public sector? Is the democratic process and its professional representatives—the politicians—important players in this game? This article addresses the question of how innovation inside government occurs, by examining the contribution of normative frames, formal positions, and interpersonal networks.

Innovation is considered here to be a characteristic form of policy development and governance, with three important dimensions of the policy and management process. The first dimension is the normative or perceptual frame through which the key players in any system define innovation and orient themselves to a particular approach to innovative work. This normative aspect of innovation provides contributors with a type of mental map to navigate their work. Also part of this map is the way in which participants understand and evaluate the main governmental institutions that might be used to create innovations within their environment. Do they find the legislative system conducive? Is the planning and budget process helpful to innovation or a source of blockage? Are the committee systems and consultative institutions important to their innovation practices? We know from contemporary work on the impact of institutional processes that the capacity issues are likely to be system, organization, and sector specific. As Weaver and Rockman (1993, 6) point out, "A country may have a strong capability for innovating in social policy, for example, but a weak capability for innovating in agricultural or energy policy." By researching actor evaluations of their experiences with these institutions we can expect to calibrate a more general account of

innovation against specific expectations concerning action channels, veto points, and lock-ins.

The second dimension is the straightforward one of roles and positions. It seems likely that how you think about innovation and work to enact it will be shaped by where you sit and that the main distinction is likely to be found between political or bureaucratic actors. It is especially important to be in a position to assess the extent to which innovation inside government is dominated by particular groups, such as policy bureaucrats and managers, and to see what politicians contribute. So while innovation is viewed as an outcome of interactions among these actors, shaped by the institutional structures they inhabit, we also expect role and rank to play a part in calibrating those interactions.

This lead logically to the third dimension, which is the particular patterns of communication or networking among key actors within these governmental systems. We know who sits on committees and shares portfolio responsibilities, but who actually interacts with whom? As David Knoke and others have demonstrated, actors are connected into relationships through networks, which significantly shape political power (Knoke 1990) and policy choices (Laumann and Knoke 1987). In the (admittedly small) research literature on innovation inside government, there are accounts that stress "the use of a systems approach," "process improvement" (Borins 2001, 6), and "system values" (Swift 1993, 18). Repeated and successful acts of innovation are seen to occur when a whole system is tilted in favor of innovative outcomes. Lundvall's (1992) book on national systems of innovation points to such properties and to the very different histories driving them in different national systems. Hall and Preston (1988) provide an institutional account from a regional perspective.

But on the other hand, we see many arguments that deny a structural explanation. First are those who say innovation runs counter to existing structures and find that "frustration with the status quo" is a major source of innovation. Second are the many observers who find innovation to be an individual rather than collective property, or simply observe on the basis of the case study literature that "innovative ideas spring up from all over the place" (Walters 2001, 9–11). Of most relevance to the concerns of this article are the few attempts to integrate studies of policy diffusion processes with considerations of policy networks. In addition to the studies by Knoke and his colleagues, Mintrom and Vergari (1998) demonstrated the importance of different types of networks for different phases of innovation, with "entrepreneurs" (akin to our innovators in this article) using external and internal networks for getting new items onto the policy agenda (external for generating new ideas from elsewhere, internal for shaping proposals so that they gain attention) and internal networks to get the required approval for the innovation.

There is clearly more to be gained by considering structures as something more than institutional roles and positions. If we allow for a model of structures, which includes patterns of relationships or networks, we can

examine innovation and what it means to be an innovator as some combination of individual and structural attributes. Mapping who talks to whom, where information is obtained and traded, and who seeks advice from whom, opens up the possibility of explaining the impact both of traditional forms of hierarchical interaction, and the more lateral and informal links which could underpin innovation. Freeman (1991, 501) makes this case for firms and there is no reason to suppose it would be less important for governments: "Both empirical and theoretical research has long since demonstrated the importance for successful innovation of both external and internal networks of information and collaboration."

Another set of issues that should be canvassed relate to the character of the innovation itself, including who becomes an innovator. Here again the research literature points us toward an almost intolerable variety. The different kinds of innovations include those which transform techniques or processes, those which produce new products, and those which alter the methodologies for drawing these different contributions into a system of value creation (Van de Ven and Rogers 1988). Within this field there is also great debate about what qualifies as an innovation, with some authors wishing to reserve the term "invention" for substantially new, R&D-driven products, leaving innovation to encompass any form of adoption of a "device, system, policy, program, process, product, or service that is new to the adopting organization" (Damanpour 1991, 556). Between the demanding test required by the invention approach and the permissive quality of the adoption approach is a vast territory.

Alongside this enormous variety of potential candidates for inclusion is a relatively modest range of studies dealing explicitly with public-sector innovation. This is partly a matter of definition. If we expand the definition of innovation to include all forms of policy change and organizational development, including such things as New Public Management, then there is an abundant literature of cases and country comparisons (Barzeley and Gallego 2006). But most of these studies focus upon either policy or management, not the systemic attributes of innovation, or if they do, they only describe systemic attributes in selected cases. The most prevalent source of accounts of more systemic forms of innovation is the public management field, where innovation is frequently defined as a desirable trait of the modern public manager. As a result, the model of innovation that emerges is often concerned with the role of leadership. Sanders et al. (1998, 33) makes this claim in relation to the U.S. reinvention agenda: "In almost every case we studied, successful organization-level change could be traced to the actions of one or more entrepreneurial leaders." Whether the term "leadership" constitutes a theory or even a model, it is at least reasonable to assert that leading actors will likely have something to tell us about what happened and why. This leads us back to the question of processes and their characteristics. Many accounts of innovation posit an organizational process for driving innovation and for explaining it when it works, but as we have observed already, the role of these structures is

controversial. We therefore need a research design that can track actors and structures, and that defines structures both in their institutional form and in relational (network) terms.

The Municipal Government Survey

Any attempt to explore innovation inside government and to investigate the role of norms, roles, and networks in explaining innovation requires a comprehensive approach. Ideally, the study needs to be able to show connections (if any) between all the actors in the governmental system and to compare systems so as to determine which characteristics hold true across governments and which are the product of a local innovation culture. For this reason we elected to investigate and compare municipal governments. This made it possible to generate a large number of cases with common institutional structures.

The 11 Australian municipal governments and four case study governments in this survey were drawn from the state of Victoria where common legislation creates a bounded environment with standard tax, service, and regulatory structures. However, the cases vary considerably in the socio-economic status (SES) of citizens, the nature and degree of party polarization, gender representation, and urban-rural diversity, providing an opportunity to discern the impact of such contextual variables on the nature and content of innovation work. On average each municipality has around nine politicians who are elected to a three-year term and then elect their mayor for a one-year term, which may be renewed. State legislation provides for a strong managerial mandate for CEOs who are appointed to a three-year renewable term by a committee of elected politicians. The average size for municipalities in this state is approximately 60,000 residents. Municipal governments raise their own taxes through property rates and charges, but receive up to half their total revenue from state or federal funds for the running of various devolved activities.

We surveyed all politicians and bureaucrats down to team leader/coordinator level (the top four levels of these organizations) in 11 municipalities between August and December 2002. We have used pseudonyms throughout the study to describe them, to foster candid contributions, and to limit self-promotion. Questionnaires were distributed either at staff meetings or through the internal mail system, and up to two follow-up approaches were made to nonrespondents. The number of respondents to the survey in total was 947, and the overall response rate was 80%. Specific numbers and response rates for each council and for politicians and bureaucrats are shown in Table 1. The overall response rate for politicians was fractionally under 70% and for bureaucrats was 81%.

Innovation Norms and Governance

Innovation is an elastic term which needs to be understood as a practice of real actors with their own dispositions and preferences. Using narrative

TABLE 1
Response Rates for Governments in Study

Government	Staff		Response		Response	
	Identified in Sample ^a	Returns	Rate %	Politicians	Returns	Rate %
Bankview	77	63	81.8	7	3	43
Bilstown	48	41	85.4	7	6	86
Kilbourne	88	78	88.6	9	7	78
Lassiter	66	51	77.3	9	4	44
Melville	54	45	83.3	8	7	88
Millside	65	57	87.7	7	2	29
Netherton	233	162	69.5	9	7	78
Oberon	93	74	79.6	10	8	80
Parkside	102	89	87.3	7	5	71
Wallerstrum	52	46	88.5	5	3	60
Yarwood	69	59	85.5	9	7	78
Overall	947	765	80.8	87	59	68

^aThis is the number of staff identified from organizational charts and other information provided by the councils, as being at the top four levels—chief executive officer, director, manager, and team leader/coordinator.

evaluations of innovation developed in a pilot study, we asked politicians and bureaucrats to locate their own normative accounts of innovation by responding to a series of statements that included such claims as “innovation means making small, continuous improvements,” and “innovation means making major changes.” Respondents were asked to indicate their level of agreement with these statements on a five-point Likert scale, ranging from strongly disagree to strongly agree. We then used the 16 items to develop a set of common positions, or latent normative structures. The 16 items were factor analyzed using principal components analysis. The result of the factor analysis is shown in Appendix A.

We have characterized the five factors that emerged as representing *institutional*, *structural*, *skeptical*, *incremental*, and *adaptive* accounts of innovation. The institutional factor describes innovation as the work of internal structures and certain standard organizational factors. The structural type refers to innovation as radical, externally focused, and sometimes based on conflict. The skeptical outlook defines innovation as being of limited applicability to the public sector, while the incremental factor refers to the role of small and planned efforts. The notion that innovation is largely about adaptation refers to sourcing ideas from elsewhere, while also seeing governmental innovation as quite different from other types.

The resulting factor scores were then used in a series of analysis of variance tests to determine whether there were significant differences between governments, between politicians and bureaucrats, and between people in different organizational positions.

Significant differences were indeed found for the institutional type across governments, and across positions, but not between politicians and

bureaucrats. This suggests a different normative frame, or “culture” of innovation in each government. CEOs identified most with the institutional model of innovation, followed by directors, then mayors, then politicians and managers, and team leaders/coordinators identified least with this outlook. The structural view was also significantly different across governments and this difference was close to significance for politicians versus bureaucrats ($p = 0.08$), with politicians more likely than bureaucrats to view innovation as something involving large changes out in the community, sometimes involving conflict.

Whether one was likely to adopt a skeptical view of innovation (seeing it as little to do with government) also varied significantly across organizational positions and was close to being significant across governments. Mayors and “others” (generally people at the fifth level down in organizational terms) were the most skeptical about whether government could contribute much to innovation, followed by team leaders/coordinators and managers. Politicians and directors were less skeptical and CEOs were the least skeptical about innovation inside government. The incremental outlook did not vary significantly either between governments, when comparing politicians and bureaucrats, or in relation to position in the hierarchy. The idea that innovation could best be expressed as a process of adaptation did not differ significantly across governments, politicians versus bureaucrats, or positions. We conclude from this set of characteristic outlooks that whatever the literature may say about the best definition of innovation, those actually involved in the work tend to construct their own cognitive understandings and these reflect, in part, their institutional role or the normative climate of their government.

We next asked our politicians and bureaucrats about the impact of the main institutions and instruments used inside government and whether these helped or hindered innovation. A list of 13 items, including such things as the role of statutory meetings, budgets, and corporate plans, was presented to them and they were asked to rate each item in regard to whether they mostly helped or hindered innovation. Coherent groups of variables emerged from a factor analysis of these items, indicating three different expressed evaluations and expectations of the institutional structures of importance to innovation. We have called these legislative governance, managerial governance, and political governance. The items can be seen in Appendix A with the factor analysis results.

The factor that we have called *legislative governance* includes characteristic evaluations of the formal decision making and authorizing processes of government such as statutory meetings of the council, committees, and related activities. The annual budget process and the corporate plan load on both this factor and the factor we have called *managerial governance*, reflecting that not only are these associated with legislative work but are also seen as part of internal management structures. Managerial governance includes the internal management processes associated with pay and performance systems and the role of divisional structures and quality

procedures. The variables making up the *political governance* factor center on the role of elections, state government regulation, and the culture, values, and other characteristics of local politicians.

The view that legislative governance helps innovation varies significantly between bureaucrats and politicians, with politicians being far more positive about what this set of processes delivers than bureaucrats. These are the parts of the legislative process over which politicians have most control. Politicians see these processes as helping, while bureaucrats at all levels see them as hindering innovation. Managerial governance and its impact on innovation also differ significantly between governments and across positions. CEOs were the most positive about the impact of managerial governance in helping innovation, followed by directors then mayors. It should be noted that mayors are the only full-time politicians and as such spend more time in the town hall than their colleagues. Political governance was seen as having a different impact on innovation in different governments, with five of them regarding it as helping while the remainder saw it as a hindrance. There were no significant differences across positions in relation to political governance helping or hindering innovation.

These results show that there are more or less coherent normative positions among these actors with respect to two different dimensions—the way innovation gets defined, and the role they believe governance plays. There are also important relationships between the normative outlooks about innovation and the assessments actors make of the institutions. The institutional norm is significantly associated with each of the three governance types, but is most strongly correlated with managerial governance (Pearson's correlation coefficient = 0.47). That is, people who view innovation as about internal structures and organization also see things like pay and performance systems as helpful. Not surprisingly, the structural outlook is not related to these internal processes, since in this view, innovation is primarily about changes out in the community. Neither the skeptical nor the adaptation norms of innovation are correlated with internal processes, indicating that if the view of innovation is limited and uncertain, or simple adaptation from elsewhere, then institutional processes are not likely to be seen as all that important.

To summarize, we found that politicians are most positive about the role of legislative governance, while CEOs and top officials are negative about this aspect of governance in relation to innovation. Whether you favor managerial governance and political governance is likely to depend on what government you work in. But regardless of this, you will favor managerial governance if you are a CEO, a mayor, or a senior bureaucrat. If you are a lower-level official you are likely to regard these organizational processes as an impediment to innovation. Views of political governance vary between governments, but not across positions. The strongest connection between innovation norms and these governance orientations is the strong positive correlation between the institutional

innovation outlook and the managerial governance orientation. See Table 2 for a summary of these different outlooks and governance types.

The research literature leads to an expectation that innovation should be strongly associated with greater levels of interaction, especially with outside actors or with those in different parts of the organizational system. Put broadly, innovative governments should contain more externally oriented officials and politicians. And given the difference in outlooks among these groups described above, we should expect important variations in the patterns of internal and external exchange up and down the hierarchy and between the two principal role groups. The next part of this article examines these networks for the same politicians and bureaucrats.

External Engagement

Network structures reflect overall patterns of connections between individuals, the level of engagement between individuals and groups, and the important advice and information links between people that form subgroups and also articulate to organizational structures. These kinds of networks are widely recognized as crucial to considerations of who influences whom during the diffusion of innovations (Rogers 1995; Valente 1995), not just in terms of the strength of individual ties between any two people, but in the structure of these ties across an entire network (Cilliers 1998).

While networks mean a number of different things, the concept is used here to focus on the puzzle of innovation. Many different kinds of networks are spoken about in political science, from policy networks that share or control resources (Considine 1994; Rhodes and Marsh 1992; Scharpf 1997) to explanations for contemporary governance and forms of social coordination (Agranoff and McGuire 2001; Kooiman 2003; Rhodes 1997; Thompson 2003). The literature on innovation is often linked to industrial networks—clusters, hubs, and so on (Lazonick 1993; Lundvall 1992). The central point of interest here is the communication between individuals and the basis this provides for understanding the way innovation is understood and practiced inside government. The research literature shows that such communication signifies relationships that can be called into service for a range of purposes, because they generate resources that actors can access to achieve desired ends (Lin 2001). However, it is clear that it is not simply a case of “more is better,” but a parsimonious use of certain types of network ties that is crucial. Two well-cited examples of this are Granovetter’s (1973) “weak ties,” which provide a link to actors who are different in some sense, and Burt’s (1992) “structural holes,” which are inhabited by brokers who bridge the gaps between actors.

Networks are a prime means to facilitate information exchange within organizations and governments. Being linked to other organizations provides opportunities to learn new ways of doing things (Borins 2001;

TABLE 2
Relationship between Outlooks and Governance Types

Governance Type	Key Attributes	Helps Innovation?	Hinders Innovation?
Legislative governance	Formal decision-making processes, committees, budget making	Politicians and those who see innovation as incremental	Bureaucrats
Managerial governance	Corporate plan, pay and performance system, quality management systems	CEOs, directors, mayors, and those who see innovation as mostly an institutional process	Team leaders and others
Political governance	Elections, state regulatory system, values of politicians	Variations between governments Variations between governments	Variations between governments Variations between governments

Martin 2000). In a similar vein, Newman, Raine, and Skelcher (2001) note the relationship between the innovative capacity of municipal governments and the existence of strong internal and external networks.

In this study, two approaches were taken to exploring such networks and their link to innovation. The first involves an examination of the level and scope of specific *external engagement* that people have with other governments and organizations that are relevant to their work. These types of activities have also been linked to innovation in other studies (Borins 2001; Teske and Schneider 1994; Walker and Enticott 2004). The second approach involves the use of social network analysis (SNA) to explain *individual connectedness* across all the actors in these systems.

Our approach to examining the level and scope of engagement with other organizations builds on previous research that used a contact matrix to explain the scope and level of interaction between organizations engaged in a single policy field in different countries (Considine and Lewis 2003). The method requires the development of a credible list of the main expected agencies with which governments will have connections. This is then presented to respondents, together with a frequency grid to enable them to indicate the amount of interaction they have with each other actor or agency.

In the case of municipal government in Australia, the important external agents are other municipal governments, the two municipal government associations, state and federal government departments, local business associations, private for-profit and not-for-profit organizations, resident's groups, trade unions, and community sector peak organizations. Bureaucrats and politicians answering the survey were asked to indicate how frequently they had some form of direct contact with people in each of these different organizations, in regard to some aspect of their work role.¹ We looked for significant differences across the mean scores for frequency of interaction. In the analysis that follows, only those results that are significantly different across governments or positions (based on analysis of variance and *t*-tests) are discussed.

The first cluster of external engagements we examined was between one local government and another. The most regular form of external interaction for these actors is with other local governments, and this is true for both politicians and bureaucrats. The other strong relationship is with the two local government industry peak groups—the Victorian Local Government Association (VLGA) and the Municipal Association of Victoria (MAV). When it comes to external relations, politicians have most contact with politicians in other municipalities, while bureaucrats have the most contact with bureaucrats in other municipalities. We could summarize this as a case of like attracting like. In network terms, this is what is meant by homophily. Among the bureaucrats, this pattern of interaction was also scaled by position in the hierarchy. So, the amount of interaction was highest for CEOs, falling with the level in the hierarchy. For example, the

CEOs had a similar level of contact with external politicians as did the politicians in their own local government, but other officials had much less contact with outside politicians.

There were also significant variations in the level of engagement across governments, indicating that if a government has a relatively high level of engagement with the industry associations, it will also be relatively high with outside politicians. If it is low in its level of contact with outside officials, it will also be low on the other counts as well.

Patterns of difference in external connectedness were also observed in interactions with a range of other organizations. Examining the differences between politicians and bureaucrats, and the effects of hierarchy within the bureaucracy, revealed some characteristic patterns for politicians. They have more engagement than bureaucrats with both business associations and residents groups. These may be described as the premier private interest groups at municipal level. Interestingly, there were no other significant differences between politicians and bureaucrats in relation to engagement with community sector organizations.

Examining differences in the level of engagement with different community organizations across positions indicates that politicians and CEOs have the most engagement with resident groups, and this falls with the level in the hierarchy. A similar pattern occurs for business associations and private firms, and in general terms for community and nonprofit organizations. The only clearly different pattern across positions is for communication with trade unions, which is highest for CEOs and directors and presumably reflects their role in negotiating pay and conditions for their staff.

Comparing across governments, engagement with trade unions was the lowest, and (with only one exception) interactions with residents groups was the highest form of contact across these different local governments. The level of engagement rises and falls fairly consistently, reinforcing the point made earlier that governments tend toward patterns of network extroversion or introversion, which persist across different groups and organizations.

The final dimension of external engagement relates to the way these governments interact with the key government departments at other levels. Evidently, all municipalities behave in a similar way from this perspective. There were no significant differences across our 11 in relation to the overall patterns of interaction with other levels of government. Where differences do show up it is in regard to particular parts of state government and we believe this is likely to be the result of functional concerns such as the development of a major environmental project, a new health service, or a significant planning problem. It is the bureaucrats who clearly carry the weight in this area and we found significant differences between them and the politicians, with the latter having far less involvement with state departments.

SNA

These patterns of external engagement provide a picture of how engaged individuals are outside their own governments. They indicate aggregate levels of connectedness and point to the engagement levels for different governments and the differences between where politicians and bureaucrats are putting their efforts. A more detailed and interesting picture of local patterns of communication is based on network information about interpersonal ties. This type of information is the foundation for many innovation diffusion studies that point to the importance of social connections and interpersonal communication to the traffic in ideas and innovations (e.g. Coleman, Katz, and Menzel 1966; Rogers 1995; Rogers and Kincaid 1981). Actors are situated in communication flows, which constitute an informal social structure that differs from the formal institutions which shape official conduct. How do these ties between actors facilitate access to valuable resources, based on connections to others, and enable innovation to occur?

In social networks, the patterns of connection point to those who are dependent on exchanges with others to gain information, and to those who have the most autonomy and can exercise control as a result of their network position (Burt 1992). The value of ties is closely aligned with proximity, and what can be achieved through using these ties to proximate others, depends on the resources that these others have and are able to share. Mapping networks so as to capture the information that links individuals into relationships that are important in mapping innovation pathways requires asking people to list the key others they interact with in regard to some central resource (advice, information, etc).

Name generators were used to collect this information—that is, we asked people to nominate those they interact with in regard to a particular resource (Burt 1984; Straits 2000). While it could be argued that every innovation has its own peculiar ingredients, it is difficult to imagine any public-sector innovations that would not require the proponents to have access to good advice and strategic information in order to proceed, and then to succeed. Advice has been used in other studies seeking to understand innovation diffusion (Coleman, Katz, and Menzel 1966; Rogers and Kincaid 1981).

Everyone in our survey was asked to indicate (in relation to the last six months) who they went to most when they wanted to get advice on a work-related issue, and who they went to most when they wanted to get strategic information about something in their own government. In relation to seeking advice, actors could nominate anybody at all, while in the case of strategic information, actors were asked to nominate anyone from within their own municipal government. So, these two different networks also have a dimension of externality or internality built in, with advice being a mixture of external and internal, while information seeking is confined to internal relationships. While name generators can effectively

be unlimited in the number of nominations actors give, we chose to limit the scope to five names each on the assumption that this would be a manageable number for the actors to recall and describe with reasonable accuracy.

Explaining the patterns that exist across all ties between actors gives a picture of network structure, but it also makes it difficult to see patterns and substructures, especially when the number of actors in the network is large. For this reason we focused on networks involving CEOs and mayors. Since we are interested in explaining the distinctive contributions of politicians and bureaucrats, these two make obvious choices. These networks show all the ties inward and outward from these important actors. These are known in social network parlance as ego networks. Unless an actor has a direct connection to the CEO or the mayor, they do not appear on these network maps. Combining ego networks for two or more actors provides a measure of salience, in that we can see what extra connectivity is added, if any. Actors with the same patterns of ties do not contribute anything extra, while those with quite different networks build bridges and open new paths, as both Burt (1992) and Granovetter (1973) have argued in their different ways.

The combined ego networks (CEO's plus mayor's) for each of the 11 governments were examined. In most of these, a notable characteristic is that the CEO's ego network is quite elaborate, while the mayor's network contains few ties and has a significant degree of overlap with the CEO's. The one exception to this is Netherton, where the CEO's and the mayor's networks are the same size. Another feature of these combined ego networks is the CEOs' tendency to reach outside the organization to gain advice in some cases (Kilbourne, Lassiter, Melville, Millside, Parkside), while in others (Bilstown and Netherton) the mayor plays this role. In Oberon, both the CEO and mayor reach outside the government, while in Yarwood, neither does.

In these networks, there is a significant domination by CEOs and a relative weakness on the part of mayors. The overall pattern in these governments is for mayors to go to CEOs for advice, while this advice seeking is not reciprocated from CEOs to mayors. It is only in one case (Wallerstrum) that the CEO goes to the mayor for advice. In two of the 11 governments (Kilbourne and Oberon) there is no direct tie in either direction between the CEO and the mayor.

The two network maps presented in Figures 1 and 2 illustrate the type of advice networks to be found around the CEO and the mayor for these governments and highlights their very different configurations. In Oberon we see the biggest separation between the CEO and the mayor (Figure 1). The CEO has 10 ties, three of which are to external people. The mayor's network contains four externals and two internals. The two ego networks combined (as in the map) shows that the mayor's and the CEO's networks in this government are entirely separate with just one bridge through two actors linking the two networks. This is the only one of our 11 govern-

FIGURE 1
Oberon Government Advice Network of the CEO and the Mayor

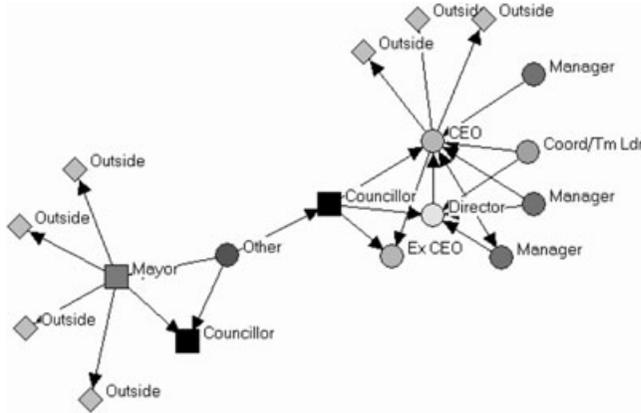
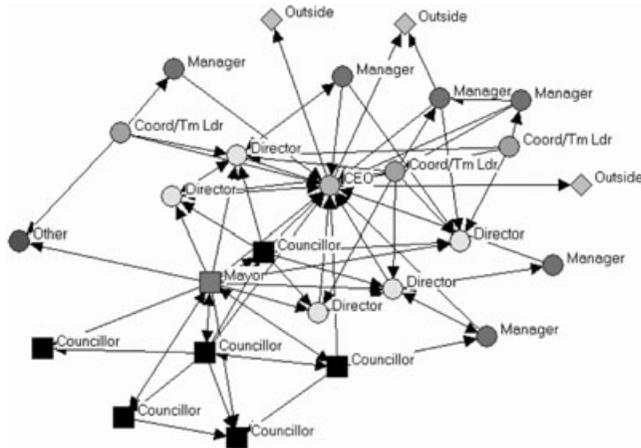


FIGURE 2
Parkside Government Advice Network of the CEO and the Mayor



ments that has both the CEO and the mayor having a strong external focus in relation to seeking advice. It is also the most extreme version of the case where the elected politicians and the senior administration are separated in regard to advice seeking.

Parkside has the largest ego network structures (see Figure 2). The advice network around the CEO contains 20 people, including four out of the possible seven politicians and three people from outside the government. The CEO and the mayor have a direct tie in relation to advice, with the mayor seeking advice from the CEO but not the other way around. The

ego network map for the Parkside mayor is larger and more elaborate than for all of the other councils. It contains all six of the other politicians. The map of the CEO's and the mayor's ego networks combined shows that the area of overlap between them is a subgroup of four politicians and four directors. The CEO is linked to managers and other officials, while the mayor is more linked to the other politicians.

Mapping networks provides a visualization and model of social structure that cannot be gained by other means. But in order to address the question of whether it is institutions or networks that have the biggest impact on innovation, a network measure that can be used in statistical analysis is required to enable us to discern the effects of networks, once other attributes have been accounted for. In particular, it helps us analyze the contributions networks make over and above the effects that would have been explained by the formal hierarchy and role position of these actors. To generate individual network scores for advice and strategic information, we calculated the in-degree centrality of each of the respondents in the four governments. Centrality is a measure of the "prominence or importance of the actors in a social network" and "prestigious actors are usually those with large in-degrees, or choices received." (Wasserman and Faust 1994, 170). These are shown in Tables 3 and 4. These scores are normalized (and hence do not refer simply to the number of times an individual was mentioned) because the scores are very dependent on network size. Normalization makes them comparable across networks (governments) of different sizes (Scott 2000).

Table 3 shows clearly that CEOs are the most central for advice, followed by directors and then managers. Politicians are approximately as central as coordinators/team leaders, and others. There are some major variations across governments in relation to this overall trend, but by and large this pattern holds. In two cases, directors were more central than CEOs. Politicians were never more central than bureaucrats. Centrality for strategic information (Table 4) has CEOs and directors being the most central, followed by managers. However, politicians, and especially mayors, are more central than lower ranked bureaucrats for strategic information. In one government, the mayor is the most central actor. Overall, politicians are more central in strategic information than advice networks.

Since external engagement with different organizations and measures of network centrality could be expected to be associated, we examined the correlations between them. The significant correlation coefficients between them are shown in Appendix B. The strongest correlation was between the two network centrality variables for advice and strategic information (Spearman's $\rho = 0.67$). A number of the external engagement variables were also strongly correlated (e.g., 0.45 for contact with the VLGA and the MAV, 0.40 for contact with the VLGA and a politician in another government).

TABLE 3
Advice Network Centrality across Positions (Mean In-Degree Centrality)

	Mayor	Politician	CEO	Director	Manager	Coordinator/ Team Leader	Other
Bankview	-	0.85	11.86	19.21	6.78	1.36	2.68
Bilstown	0.00	0.53	-	17.76	4.86	1.10	1.32
Kilbourne	1.32	1.10	14.47	12.63	6.17	0.70	1.03
Lassiter	4.00	3.33	22.00	20.00	7.54	3.09	1.79
Melville	2.33	1.55	25.58	16.86	4.51	1.40	0.93
Millside	1.82	0.00	21.82	13.45	4.00	2.25	2.31
Netherton	0.00	0.65	3.90	6.17	1.69	0.76	0.79
Oberon	1.39	1.98	8.33	11.11	3.44	0.95	0.44
Parkside	3.49	2.62	18.60	11.63	3.94	1.46	1.42
Wallerstrum	2.22	0.00	17.78	14.44	4.44	1.23	5.19
Yarwood	1.75	2.34	21.05	13.68	5.51	1.94	0.00
Total	1.83	1.53	16.54	13.88	4.46	1.30	1.30

TABLE 4
 Strategic Information Network Centrality across Position (Mean In-Degree Centrality)

	Mayor	Politician	CEO	Director	Manager	Coordinator/ Team Leader	Other
Bankview	-	0.85	20.34	25.42	9.18	2.05	3.00
Bilstown	5.13	0.51	-	30.13	7.89	0.99	0.64
Kilbourne	5.26	2.41	11.84	20.26	9.95	0.93	0.94
Lassiter	10.00	0.67	32.00	34.67	10.77	1.09	2.00
Melville	4.76	2.38	38.10	32.14	6.85	1.43	0.95
Millside	10.91	3.64	58.18	42.91	12.55	2.99	4.96
Netherton	3.27	1.20	1.31	0.65	1.33	1.17	1.36
Oberon	1.43	1.90	20.00	19.43	5.06	1.11	1.19
Parkside	12.79	2.03	31.40	19.53	5.55	1.31	1.03
Wallerstrum	2.22	2.22	24.44	21.11	6.52	1.98	5.93
Yarwood	3.70	1.85	29.63	21.48	9.39	1.99	0.93
Total	5.95	1.72	26.72	24.01	7.27	1.48	1.84

Who Are the Innovators Inside Government?

In this part of the article we analyze the question of governmental innovation from the perspective of the innovator. We use the testimony of all those actors within these networks to determine which actors are known to be innovative. We then explain the extent to which institutional and network attributes help in identifying innovators. Do politicians and bureaucrats perform equally well or differently? We repeat the earlier point about innovation to avoid confusion. In this study we allowed respondents to nominate projects, programs, and activities as innovations; we did not insist upon a single definition of what was, or was not, a true example of innovation. We took a similarly open approach to the notion of who is an innovator, allowing respondents to nominate who they recognized as an innovator in their government, without proscribing their choices in any way.

Since we could not interview people across all 11 governments, we chose four to study in more depth for the second part of the study, where we needed to use interviews to gather information in greater depth. The four governments chosen represent a variety in terms of SES of the citizens, political orientation of the governments, whether they were close to the city center or further out, their dominant innovation norms and views of governance, and different levels of external engagement and network structures. The main characteristics of the four governments are:

1. Kilbourne—fringe metro, lower, and middle SES, swing seats
2. Melville—middle metro, upper middle SES, solid conservative
3. Millside—inner metro, old working class and gentrified, solid Labor
4. Parkside—inner metro, gentrified, Labor/Green.

We interviewed a total of 104 key participants from these four governments—26 from Kilbourne, 27 from Melville, 26 from Millside, and 25 from Parkside. Interviewees were asked to nominate the key innovators in their municipality.²

We ran multiple regressions for each of the four governments individually, and for the four combined ($n = 269$), using innovator score as the dependent variable. A question of central importance to this article is whether formal institutional position or informal network position is the most important predictor of being an innovator.³ Is it the authority that comes from the role of politician or bureaucrat or level in the hierarchy, or the connections based on communication and information exchange, that best explain who is, and who is not, an innovator? And what role do innovation norms and assessments of the impact of different aspects of governance play? Are innovators more or less likely to have particular outlooks?

TABLE 5
Key Innovator Status with Strategic Information Networks and Position
(Standardized Regression Coefficients, Significant at $p = 0.05$)

	Kilbourne	Melville	Millside	Parkside	All
<i>n</i>	88	53	62	93	296
Adjusted R^2	0.30	0.39	0.62	0.60	0.39
Strategic information network centrality	0.63	–	–	0.41	0.43
Position (ref: coordinator/team leader)					
Mayor	–	–	0.47	–	0.12
Politician	–	0.44	0.56	0.47	0.33
CEO	–	–	0.27	0.31	0.14
Director	–	–	0.35	–	–
Manager	–	–	–	–	0.13
Other	–	–	–	–	–

Note: Dependent variable = percentage of “key innovator” nominations per council. Regressions conducted using enter method.

To examine which of innovation norms, governance types, networks, and positions are the most important in determining innovator status, we employed multiple regression. As indicated earlier, the two network variables were highly correlated with each other. The external engagement variables were also strongly correlated, and since they are of less interest than the network variables, they were not used. Since the two network centrality scores were highly correlated, two regressions were run. Advice network centrality was used as an independent variable in one, and strategic information network centrality was used in the other. Preliminary analyses lead us to exclude the innovation norms and governance types, as they were weakly correlated to innovator status. Networks and positions were by far the most crucial predictors of innovator status in this preliminary analysis.

A second set of regressions were run with the independent variables confined to networks and positions. The results are shown in Tables 5 and 6. The method used was to force the same set of variables into the regression equations, and all of these regressions were significant at the 0.05 level.

Strategic information network centrality is a significant predictor of recognition as an innovator in two of the four governments, as well as overall. Being a politician is also a predictor in three of the four and overall, and being the CEO was significant in two of the four governments and overall (Table 5). This presents a mixed picture of whether it is networks or institutional position that counts, with network the only important factor in Kilbourne, and position the only important factor in Melville and Millside, while both are significant in Parkside and the total sample. Of the positions, it is being a politician that is the strongest predictor of innovator status, although CEOs are also important innovators, and so are

TABLE 6
Key Innovator Status with Advice Networks and Position (Standardized Regression Coefficients, Significant at $p = 0.05$)

	Kilbourne	Melville	Millside	Parkside	All
<i>n</i>	88	53	62	93	296
Adjusted R^2	0.16	0.37	0.63	0.59	0.34
Advice network centrality	–	–	–	–	0.21
Position (ref: coordinator/team leader)					
Mayor	–	–	0.48	–	0.16
Politician	–	0.45	0.57	0.47	0.34
CEO	–	–	0.25	0.40	0.22
Director	–	–	0.34	–	0.24
Manager	0.31	–	0.20	–	0.21
Other	–	–	–	–	–

Note: Dependent variable = percentage of “key innovator” nominations per council. Regressions conducted using enter method.

those further down the hierarchy in some cases. So, both formal position and informal network relationships are important, and while there must be some overlap between these (since it is impossible to separate a person’s connections from their position), they are not exactly the same.

Institutional position is more important in predicting innovator status than advice network centrality, as can be seen in Table 6. Position is a significant predictor of innovator status in all four governments while advice network centrality was not significant in any of the four, although it was significant in the total sample. Again, being a politician was the strongest predictor of innovator status, with the exception of Kilbourne. Interestingly, in two governments, as well as overall, the managers were seen to be the innovators.

Conclusion

This study investigated the nature of innovation inside government, focusing on a series of interrelated explanations. The first of these was innovation norms, including different assessments by actors of the potential for governments to be innovative. These normative positions also included the assessment and evaluations actors make of their own governance systems, including the degree to which such things as legislative and deliberative structures help or hinder innovations. The second dimension of the study was the effect of institutional position, both in relation to role (politician or bureaucrat) and level in the hierarchy. Our purpose here was to discern the effect of position on attitudes to innovation and likelihood of being an innovator.

The third aspect of the study was to gauge the effect of networks, both as forms of external engagement with other organizations, and as personal networks for getting and giving advice and strategic information networks. Finally, to bring all these attributes together around a single outcome measure, we looked at which actors were recognized as innovators, and examined whether norms, governance types, networks, or institutions are most important in determining innovator status.

What we found is that networks are important and explain more than can be found by a focus upon position alone. But some types of networks are more important than others. Advice networks are somewhat related to being an innovator, but strategic information networks are more crucial. If you are seen as a “go to” person for strategic information, you are also very likely to be seen as an innovator. While being seen as a “go to” person for advice was also related to innovator status, it was less so. Relating this to Mintrom and Vergari’s (1998) findings about the importance of different networks for different phases of innovation, we can postulate that strategic information centrality is important for innovator recognition because these actors are doing the visible, internal work of getting innovations approved and in place. Scanning for ideas outside the organization through advice networks might well lead to initiation of innovation, but this is more intangible and diffuse.

With strategic information network centrality being more important than position in the hierarchy, the position of politician being a significant predictor of innovation status, and this being more important than advice network centrality, we conclude that networks are more important than hierarchical position in explaining innovation. However, not all networks are created equal. Strategic information was more important, but the distinction between our two types, and the differences discussed by Mintrom and Vergari, suggest there may be other networks worth investigating to further elaborate this approach. The idea that “innovative ideas spring up from all over the place” (Walters 2001, 9–11), turns out to be correct in the terms that Walters discussed, with those further down the hierarchy being recognized as innovators in some governments—albeit to a lesser extent than those higher up. As Bardach (1998) pointed out, there are many more people at lower levels of the hierarchy than at the top, so we should not be surprised if some of them turn out to be innovators, given the increased probability of this occurring based on the weight of numbers. Our most important finding is that innovation and innovators inhabit a specific kind of institutional space, defined in part by structural position but more by their place in informal, actor networks.

Acknowledgments

We gratefully acknowledge a five-year Australian Research Council Discovery Grant (DP0208794) that funded this research, and our colleague Damon Alexander for all his assistance.

Notes

1. Respondents were asked to include communication by phone, e-mail, or in person, but to *exclude bulk e-mail* circulars. The engagement matrix asked people to score the frequency of contact on a five-point scale ranging from “never” (zero) to “daily” (four).
2. These could be politicians, bureaucrats, or people outside the government. A specific number of nominations was not asked for, with the interviewer simply writing down as many innovators as were nominated. Those politicians and bureaucrats who were not mentioned as key innovators were assigned a score of zero, and those who were, were given a score to reflect the number of times they were nominated. A total of 464 nominations were received from the 104 interviewees, so the mean number of nominations per interviewee was around four. These nominations were converted into percentages of the total number of nominations for each of the four governments separately, and for the four governments combined.
3. While there are some limitations in using local reputation as the measure for being an innovator, it is argued that with such a large sample of key actors from across these governments it is unlikely that we would have missed many noteworthy cases.

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APPENDIX A Factor Analysis of Innovation Norms and Governance Types

Innovation Norms Factor Loadings (n = 715)

	Institutional	Structural	Skeptical	Incremental	Adaptation
Small continuous improvements	–	–	–	0.73	–
Develop or adapt new technology	–	–	–	–	0.44
Making major changes	–	0.47	–	–	–
Planned effort to improve process, service program	–	–	–	0.71	–
Working closely with community	–	0.60	–	–	–
Not something governments do	–	–	0.69	–	–
Resolving conflicting priorities	–	0.56	–	–	–
Accountability requirements limit innovation	–0.40	–	0.58	–	–
Need to move outside regular channels	–	0.60	–	–	–
No difference between roles of experts, politicians, managers	–	–0.43	–	–	0.52

Appendix A Continued

Innovation Norms Factor Loadings ($n = 715$)

	Institutional	Structural	Skeptical	Incremental	Adaptation
See self as an innovator	–	–	–0.41	–	0.46
Structures encourage innovation	0.82	–	–	–	–
Councillors identify needs, officials create innovations	–	–	0.54	–	–
Organization values innovative individuals	0.82	–	–	–	–
Strength is in adapting innovations to situation	–	–	–	–	0.56
Difficult to be innovative in our organization	–0.78	–	–	–	–

Principal components analysis with varimax (orthogonal) rotation.

Only factor loadings with a magnitude of 0.30 and greater are shown in this table.

Percentage of variance explained by 5 factors = 51%.

Governance Types Factor Loadings ($n = 619$)

	Legislative Governance	Managerial Governance	Political Governance
Annual budget process	0.51	0.38	–
Council corporate plan	0.35	0.49	–
Council statutory committee meetings	0.79	–	–
Council advisory committee meetings	0.72	–	–
Council meetings	0.72	–	0.39
Pay and promotion system	–	0.54	–
Values and culture of executive management	–	0.80	–
Divisional structure of council	–	0.62	–
Quality of proposals coming from officers	–	0.62	–
Council election campaigns	–	–	0.67
State government regulation of local government	–	–	0.55
Values and culture of elected councillors	–	–	0.75
Quality of proposals coming from councillors	–	–	0.74

Principal components analysis with varimax (orthogonal) rotation.

Only factor loadings with a magnitude of 0.30 and greater are shown in this table.

Percentage of variance explained by 3 factors = 52%.

APPENDIX B: Correlation Coefficients (Spearman's Rho) for Contact Variables

	Advice	Strat Info	Officer in Another Council	Councillor from Another Council	Officer from State Govt Dept	Officer from Federal Govt Dept	Business Assoc	Medium/Large Private Firm	Resident's Group	Trade Union	Community Sector Peak Org	Nonprofit Org	MAV	VLGA
Advice	1.000	0.666	0.086	-	-	-	-	-	0.092	-	-	-	0.249	-
Strategic info	0.666	1.000	0.087	-	0.092	-	-	-	0.086	-	-	-	0.242	-
Officer in another council	0.086	0.087	1.000	-	0.244	0.138	0.099	-	0.127	-	0.195	0.146	0.170	0.200
Councillor from another council	-	-	-	1.000	0.225	0.201	0.245	0.200	0.260	-	0.235	0.275	0.340	0.403
Officer from DOI	-	-	-	-	0.289	0.175	0.268	0.319	0.250	-	0.201	0.167	0.163	-
Officer from other state gov't dept	-	0.092	0.244	0.225	1.000	0.359	0.285	0.227	0.260	-	0.317	0.264	0.186	0.197
Officer from federal gov't dept	-	-	0.138	0.201	0.359	1.000	0.275	0.135	0.134	0.122	0.227	0.311	0.199	0.275
Business association	-	-	0.099	0.245	0.268	0.275	1.000	0.529	0.348	0.153	0.304	0.263	0.141	0.182
Medium/large private firm	-	-	-	0.200	0.319	0.135	0.529	1.000	0.281	-	0.234	0.225	-	-
Resident's group	0.092	0.086	0.127	0.260	0.250	0.134	0.348	0.281	1.000	0.164	0.415	0.341	0.118	0.194
Trade union	-	-	-	-	0.122	0.122	0.153	0.281	0.164	1.000	0.133	-	0.135	0.178
Community sector peak organization	-	-	0.195	0.235	0.201	0.227	0.304	0.234	0.415	0.133	1.000	0.513	0.221	0.239
Nonprofit organization	-	-	0.146	0.275	0.167	0.311	0.263	0.234	0.415	0.133	0.513	1.000	0.185	0.294
MAV	0.249	0.242	0.210	0.340	0.163	0.199	0.141	-	0.118	0.135	0.221	0.185	1.000	0.446
VLGA	-	-	0.143	0.403	0.197	0.275	0.182	-	0.194	0.178	0.239	0.294	0.446	1.000

DOI, Department of Infrastructure; MAV, Municipal Association of Victoria; VLGA, Victorian Local Governance Association.