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# Being around and knowing the players: Networks of influence in health policy

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## Abstract

The accumulation and use of power is crucial to the health policy process. This paper examines the power of the medical profession in the health policy arena, by analysing which actors are perceived as influential, and how influence is structured in health policy. It combines an analysis of policy networks and social networks, to examine positional and personal influence in health policy in the state of Victoria, Australia. In the sub-graph of the influence network examined here, those most widely regarded as influential are academics, medically qualified and male. Positional actors (the top politician, political advisor and bureaucrat in health and the top nursing official) form part of a core group within this network structure. A second central group consists of medical influentials working in academia, research institutes and health-related NGOs. In this network locale overall, medical academics appear to combine positional and personal influence, and play significant intermediary roles across the network. While many claim that the medical profession has lost power in health policy and politics, this analysis yields few signs that the power of medicine to shape the health policy process has been greatly diminished in Victoria. Medical expertise is a potent embedded resource connecting actors through ties of association, making it difficult for actors with other resources and different knowledge to be considered influential. The network concepts and analytical techniques used here provide a novel means for uncovering different types of influence in health policy.

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## Introduction

Policy making is fundamentally shaped by actors who seek to use the resources at their disposal to have their concerns taken seriously. Yet even where the use of power is transparent—which it sometimes is but often is not—it is far from straightforward to examine. Concentrating on the macro-level in order to understand how the policy process is structured

by powerful groups, allows one level of analysis of power. This is a useful place to begin.

In the pluralist view, power is distributed among different groups. The competition between them is seen as inevitable and necessary, demonstrating a lack of concentration of power. Pluralism recognises the varying ability of different groups to exercise power, but claims that no one group is dominant. This view of power as diffused, decentralised and discontinuous sits uneasily with the politics of health. Health politics is better characterised in Marxist or Elitist terms, where power is concentrated,

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centralised and exercised continuously. Disproportionate power is wielded by the few based on class and politics. A structural interest perspective is also concerned with the sources of power and the groups which benefit from the structure of society. Elite power, in the structural interest model, emphasises power based on professional position, which also embodies class and politics.

Alford (1975) classified structural interests in health policy as dominant, challenging, or repressed. Professional monopolists are the dominant group. Their interests are served by the existing social, economic and political structures. Corporate rationalists challenge the professional monopoly, by emphasising rational planning and efficiency ahead of deference to the expertise of medical professionals. Equal health advocates represent repressed structural interests. They push for better access to services against the entrenched structures (Alford, 1975; Duckett, 1984).

Examining structural interests in health sheds light on the distribution of power at the macro-level, and in relation to decision making. Organised medicine has been increasingly challenged by governments, insurers and large health service delivery organisations over the last three decades (Harrison & Pollit, 1994; Wilsford, 1995). Yet analysis at this level reveals a partial story of how policy is made. In this paper, health policy is seen as a complex network of continuing interactions between actors who use structures and argumentation to articulate their ideas about health (Lewis, 2005). In this view of health policy, networks provide a conceptual space for moving outside the locked in descriptions that accompany examinations of well-established and powerful interests.

The aim of this paper is to examine whether the medical profession has lost power in the health policy arena, by analysing the interconnections between influential actors in health. It addresses two questions: “Which actors (individuals and groups) are regarded as influential in health policy?” and “How is health policy influence structured in network terms?” In addressing this aim, macro-level considerations, such as structural interests, are important, but the focus is on individuals and organisations (micro- and meso-levels).

### **Influence and the policy process**

Influence is crucially important in the health policy process. Some models of policy making see

agenda setting as resembling a garbage can (Cohen, March, & Olsen, 1972) or a policy primeval soup (Kingdon, 1995) where actors struggle to attach their preferred solutions to problems, emphasising individual actors and their policy issues. Such an approach seeks to understand how some issues make it onto the political agenda while others do not (Bachrach & Baratz, 1962), as a matter of sponsorship by influential actors.

An Australian study conducted over the years 1991–1993 examined these concerns. Using a modified reputational approach, this study looked at who was regarded as influential in health policy (Lewis & Considine, 1999). Both the location of those who were seen as influential, and also the main discipline in their professional training, indicated which groups were exercising a controlling influence. The actors seen as influential were predominantly medically trained and working in academia, health bureaucracies and public teaching hospitals (Lewis & Considine, 1999).

In the health arena, the medical profession is clearly an important political elite. Traditionally it has exercised significant power in relation to health policy, because of its special knowledge and authority, its particular form of organisation, its legally granted occupational monopoly, its position at the top of the occupational hierarchy in health, its autonomy, and its wider cultural authority regarding what constitutes health and illness (Freidson, 1970; Illich, 1976). Freidson’s (1988) distinction between different levels of the medical profession indicates that the corporate elite of medicine may exercise significant control in health policy agenda setting, divorced from frontline service providers (Lewis, 2002; Light, 1995). In this paper, it is the corporate elite of medicine which is of primary concern.

Over the last three decades, organised medicine has been challenged on a number of fronts. Some have argued that the dominance of medicine has declined dramatically (e.g. Giaimo, 1995; Harrison & Ahmad, 2000; Wilsford, 1995), while others are more sceptical (Elston, 1991; Lewis, 2002). Policy changes have certainly had an impact on the work of individual professionals (Harrison & Ahmad, 2000; Lewis, Marjoribanks, & Pirota, 2003). But the impact on the policy making or political authority of medicine is far more contested.

The sociological literature on different aspects of professions, as well as that which argues that the medical profession has lost power, frames this

paper. To examine individual influence, an approach centred on networks of individuals and organisations, which can reveal both organisational (positional) and interpersonal forms of power, promises further insights. But ‘networks’ mean many different things. So precisely what kind of networks are of interest in this paper?

### Network concepts and network analysis

The network literature is expanding rapidly, encompassing everything from network governance (Kooiman, 2003; Rhodes, 1997) and policy networks (Rhodes & Marsh, 1992), and networks as a form of management (Kickert, Klijn, & Koppenjan, 1997), through to actor networks (Law & Hassard, 1999) and social networks (Degenne & Forse, 1999; Wasserman & Faust, 1994). This expansion has led to a good deal of obfuscation in terms of what is actually under consideration in different literatures.

To understand this literature, it is important to distinguish between the network as a conceptual model, and as a form of coordination and governance (Thompson, 2003). A further important distinction needs to be made within Thompson’s view of networks as a conceptual category, which includes networks as a tool of analysis. There is a key difference between the network as theory (concept), and the network as an analytical technique (Lewis, 2005), with the first establishing a means for thinking about interconnectedness and the second providing tools for measuring it.

Networks as a mode of governing either deliberately (Kickert, Klijn, & Koppenjan, 1997) or as a metaphor for the reality of contemporary governing (Kooiman, 2003; Rhodes, 1997), are not of primary interest here. The networks of interest here are self-organising rather than designed, and informal rather than formal (Thompson, 2003). Of course, network ties reflect hierarchical structures, markets and even those managed networks that reflect formal structures. But the point here is to reveal informal and spontaneous ties insofar as it is possible to separate these out from ties arising from designed systems.

The focus here is both organisations and interpersonal relationships, and so two different types of networks are useful; policy networks and social networks. Having very briefly outlined the many different network literatures, and indicated that only these two are of primary importance here, it is worth beginning with what they have in common.

Networks of all types consist of a set of nodes (actors) linked by some form of relationship (or ties), and delineated by some specific criteria. The important question then is what represents a node, a tie or a boundary (Diani, 2003) in different formulations.

Policy networks are configurations of individuals and organisations engaged in a policy sector (Rhodes & Marsh, 1992). They have been conceptualised as coalitions, corporatist institutions or professional monopolies. In each case the network is defined as representational closure designed to share resources (Benson, 1982; Sabatier, 1988). Of particular interest here is the “professionalised network”, which has been used in relation to health as an explanation for change being circumscribed by medical professionals (Wistow, 1992). To enter health policy networks, individuals need to invest in learning the group language, establishing relationships, and even subscribing to a certain policy paradigm (Lewis, 1999). This does not imply that connections are based on trust or cooperation, only that to be part of the network, some meanings must be shared.

The literature on policy networks concentrates on functional approaches to understanding how interest groups, linked into semi-formal and ongoing relationships, control the policy process (Benson, 1982). Nodes are generally seen as organisations, ties are based on shared activities and resources (which can be based on conflict rather than cooperation), and the boundary is determined by the analyst. This helps move beyond traditional approaches to understanding powerful interests. However, it stops short of revealing the arrays of formal and informal connections between individuals.

Some research has been directly concerned with how networks of organisations shape policy making: “State policies are the product of complex interactions among government and non-government organisations, each seeking to influence the collectively binding decisions that have consequences for their interests.” (Laumann & Knoke, 1987, p. 5). In their landmark study of inter-organisational networks and policy making, Laumann and Knoke used a framework that consists of a set of consequential corporate actors, each possessing variable interests in a range of issues, and resources that can be mobilised.

Social network approaches focus on interpersonal ties between individuals. Nodes are individuals and

ties are direct personal interactions or connections, based on some criteria. In social networks, relations (ties) can be single or multiple and may also differ in terms of direction, content, intensity and strength. They do not automatically indicate like-mindedness or trust. Boundaries can be defined by the analyst's view of which groups are involved, or by including only those people that are actually related to each other somehow (Diani, 2003).

Conceiving of influence as a network resource which has symbolic utility, whether it is used or not, it is obvious that actors have personal and positional resources, as well as those they can access through their ties with other actors. A network based view of individual social capital, such as Lin's (2001), provides a useful way of describing different types of influence. Actors are able to wield influence because they have resources embedded in positions within an organisation (which has power, wealth, and a reputation of its own), because of their own personal resources (e.g. education, charisma), and because of their ties to others who also have resources.

It follows that understanding influence requires seeing it as related to the connections between individuals, which Lin (2001) and others before him (e.g. McPherson & Smith-Lovin, 1987) have argued are more likely to be based on homophily—the “like me” principle. Mapping social networks of inter-personal ties allows the analyst to generate a detailed picture based on individual connections, which adds to the more formal inter-organisational relationships that constitute policy networks. By examining who is connected to whom, it is possible to see who has access to resources and who exercises control within a network (Burt, 1992). This can be based on competition, or on collaboration and trust, or simply who has the most similar personal characteristics.

Finally, there is a distinction between networks as a concept and networks as an analytical technique. Both are used here. Network concepts (policy networks and social networks) have been used to provide a theoretical focal point for thinking about influence in relational terms, and to inform the research design. Social network analysis (SNA) techniques have been used to design the data collection methods and to shape the data analysis. These have started to gain favour in relation to health research. For example, this journal has published articles which use SNA in relation to information dissemination (West et al., 1999) and

identifying opinion leaders (Kravitz et al., 2003). But SNA has not been used previously to examine influence in health policy.

### **Influence in health policy in Victoria**

Australia is a federation of states and territories, with a national health insurance scheme based on taxation (Medicare), and a relatively strong private sector, with about one-third of recurrent expenditure occurring outside the publicly funded health system. Victoria is the second most populous state, with around five million people. States are responsible for the functioning of public hospitals, although they receive funding from both the federal and state governments, and professional registers are held by the states. In broad terms, the federal government is a funder rather than a provider of health services, and state governments have more direct links with hospitals and other health service providers. Much of medicine, particularly general practice, stands outside this because doctors are mostly paid directly by Medicare and their patients. Universities in Australia are a federal government responsibility, but the states are involved in funding health professional training through these institutions.

The level at which different health professions are active varies because of these institutional arrangements. Much of nursing's influence and union activity is directed at state governments because hospitals are a state responsibility. Medicine, on the other hand, has more leverage at the federal level, because Medicare is administered by the federal government. Although this research is focused on a single state, federal level actors are clearly important and were nominated, but not as highly as state-based actors.

Mapping influence first requires the identification of influential actors. Positional methods for doing this define influential actors as those holding positions in the top levels of business, government and unions (Kadushin, 1968; Laumann & Knoke, 1987). This method clearly favours some interests over others and leads to important community groups or individuals being overlooked. Reputational methods, in contrast, use elites to nominate others who they consider influential. This can lead to the nomination of influential friends, neighbours, people they like, or those who are merely noisy (Hawley & Svava, 1972).



As the central concern here is perceptions of influence amongst elites, a reputational approach, adapted from the Lewis and Considine (1999) study was used. This equates to what is known as a name generator in SNA, and is widely used to collect network information based on a range of relationships (Burt, 1984; Straits, 2000). Rather than selecting someone in an obviously important position to begin the snowball (such as the Minister for Health) an academic was chosen as the starting point for snowballing. The initial actor was not medically qualified, but heavily involved in the health sector in the state. Since medicine's power is a central concern, and assuming that many ties will be homophilous (between similar actors), it was important to start "outside" medicine, to ensure that nominations at least began with non-medical actors. Of the 16 people nominated by this first actor, only two were academics, so there was no obvious initial bias towards other academics.

In mid-2001, the initial actor was asked to nominate those regarded as influential, using the following definition:

influence is defined as a demonstrated capacity to do one or more of the following: shape ideas about policy, initiate policy proposals, substantially change or veto others' proposals, or substantially affect the implementation of policy in relation to health. Influential people are those who make a significant difference at one or more stages of the policy process.

Everyone nominated was then contacted and asked to make a list of influentials, using the same definition. These nominees were not provided with others' lists. New nominees were then approached and asked to do the same. No set number of nominations was asked for, as specifying a certain number was considered to risk either eliminating important people, or forcing people to keep adding others who were not especially influential.

In this type of network there is in effect no boundary. Network closure is generally an artifact of research design, with the boundary being drawn arbitrarily (Kossinets, 2004). Here an empirical approach has been taken, with the boundary defined by who nominates whom. Hence, a decision rule had to be made about where to stop the survey. While each new set of nominations adds new names, after five steps out from the starting point, the number of new names being added began to drop. The progression was from one person in the first

round, to 16 in the second round, 31 in the third round, 65 in the fourth round, 64 in the fifth round, and then 41 in the sixth round. The decision was to stop the snowballing at this point.

This generated 218 names of people who were regarded as influential in health policy. Of these, 115 people were contacted. Initially everybody nominated was approached, then after the snowballing was stopped, only those nominated more than twice were contacted. So, a second decision rule about defining the boundary was to contact everyone nominated in the early rounds, but for those appearing in the later rounds, only those with more than two nominations were contacted. At the end of this process, 62 of the 115 people contacted (54 per cent) had returned nominations of influence, noting whether they had ongoing contact with those nominated.

This procedure for identifying influential actors produces a particular locale within a network around the starting point. That is, the resultant sub-graph of the network identified here cannot be considered as representative of the "whole" network (which effectively has no boundary) in the usual sense of sampling, since a different starting point will generate a map that might be substantially different. However, many of the actors identified are in influential positions. So while this map does not give the topography of an unbounded, entire network of health policy, it certainly yields the contours of a relatively important part of it.

The 218 people nominated is a bigger network than the 62 respondents, which includes a substantial number of nominations directed at people who were not contacted as well as those who did not respond. This group can be regarded as a proxy for a larger part of the influence network. An indication of who the non-responders were can be gained by comparing the distribution of the 62 respondents with the larger set of nominees (see Tables 1 and 2).

Table 1 shows nominations by location on the basis of the number of people nominated, and the number who returned forms (respondents). Those nominated most frequently as influential were located in academia, followed by health bureaucracies and research institutes and non-government organisations (NGOs), then hospitals. People in political parties, and professional associations, professional colleges and unions, were the least frequently nominated. Academics are slightly over represented in the respondents, as are those located in research institutes and NGOs, while professional

Table 1  
People nominated as influential in health policy by location<sup>a</sup>

	<i>n</i>	%	<i>r</i>	%
Academia	43	20	18	29
Bureaucracy (State or Federal)	27	12	7	11
Hospitals	30	14	8	13
Research Institute/NGO	35	16	14	23
Professional Association/Union/College	21	10	3	5
Political party	13	6	2	3
Other organisation	46	21	10	16
Total <sup>b</sup>	215		62	

<sup>a</sup>This table includes the number of people nominated as influential (*n*), the number of respondents (*r*) and percentages (%).

<sup>b</sup>Information on location missing for some people.

Table 2  
People nominated as influential in health policy by discipline<sup>a</sup>

	<i>n</i>	%	<i>r</i>	%
Economics/administration/management	15	10	9	16
Medicine	110	73	35	61
Other	27	17	13	23
Total <sup>b</sup>	152		57	

<sup>a</sup>This table includes the number of people nominated as influential (*n*), the number of respondents (*r*) and percentages (%).

<sup>b</sup>Information on discipline missing for some people.

associations and unions, and political parties are somewhat under represented.

The vast majority of people nominated as influential (73 per cent) were medically trained, with the second largest group comprised of people with economics, management and administration qualifications (see Table 2). Medicine is slightly under represented and economics, administration and management, over represented in the respondent group. Those with medical qualifications who were widely recognised as influential are in positions that require a substantial amount of management and administration. They are heads of departments, chairs of committees, and deans of faculties. They represent the corporate elite of the medical profession, and have taken on the control of the rest of the profession to some extent.

The gender of the set of influential actors nominated was notably skewed, with 72 per cent of people nominated as influential being male. Of those who responded, 73 per cent were men. The

gendered nature of senior political and administrative positions (Bologh, 1990) makes it difficult for women to attain these positions and then to fit with expectations of what 'women with influence' should look like. It also relates to the gendered nature of professions such as nursing, which does not have the same political authority as medicine (Davies, 1996; Lewis, 2002).

Based on these nominations of 218 influential actors, those who top the list are health academics, senior bureaucrats and people located in research institutes and NGOs. Most of the influential actors are medically trained, and the vast majority of them are men. This describes what is essentially votes of perceived influence, but reveals nothing about relationships, in terms of who nominated whom.

## Network structure

The information generated by asking people to nominate who they see as having influence provides relational data that can be used to examine the structure of this part of the network. While the response rate is not high at 54 per cent, there are no major discrepancies between nominees and respondents based on location, discipline, and gender, as outlined in the previous section.

For social network analytical techniques, it is important to have both ties sent (nominations of others) and ties received (nominations from others). In this study, two senior bureaucrats within the state health authority received the second and eighth highest number of nominations. However, neither of these people returned forms themselves and so had to be excluded from the network analysis. The information collected through the nomination process included whether the nominators had ongoing contact with those they nominated. The majority of ties (82 per cent) were to actors that the nominator claimed to have ongoing contact with. An additional 15 per cent of ties were sent to people the nominator had met but had no ongoing contact with. Only 3 per cent of ties were sent to people the nominator had never met.

It is possible to regard as influential those that one has not met, yet this group of nominators appear to have based their judgements of influence on who they know personally. However, an actor moving in these circles who is highly nominated as influential, is sure to know other influential actors—and they will be similar in this sense as well as in terms of education and class. So perhaps the

tendency to nominate known others indicates homophily. Alternatively, having made a list of influential actors, perhaps people then felt compelled to claim acquaintance with them, in order to demonstrate their own influence by association. In any case, little can be said in terms of the strength of these ties. Since virtually all ties were of the same type, the remaining discussion is based on ties as simply either present or absent.

Examining the structural equivalence of actors within the network is a means of establishing global network structure. Blockmodelling partitions actors into structurally equivalent sets within a network, based on regularities of patterns of relations among actors (Breiger, 1976). This means establishing which actors nominate other actors in the network in a similar pattern, and which actors are themselves nominated by others in similar patterns. The resulting model is a view of social structure obtained by aggregating relational data without imposing a priori categories or attributes of actors (White, Boorman, & Breiger, 1976).

Network structure, based on the data gathered from the 62 people who completed nomination forms, was analysed using the blockmodelling procedure in UCInet (Borgatti, Everett, & Freeman, 2002). This generated the eight blocks shown in Table 3. The labels reflect an assessment of what the individuals within each block have in common. The numbers in Table 3 indicate the proportions of ties between the blocks. Hence, 0.44 (or 44 per cent) of the total possible ties going from the Hospitals and La Trobe University block to the core influentials block, were present. Only two of the eight blocks

were relatively cohesive as measured by the proportion of ties within blocks (on the diagonal). Public health medicine is the most cohesive block with 40 per cent of ties within the block. For the core block, 23 per cent of ties were internal.

The core block contains actors widely seen by others in the network as influential, who themselves nominated few people as influential—especially outside this core group. It has eight people in highly visible positions: the Minister for Health; the Minister's Chief of Staff; the Secretary of the Department of Human Services (DHS); the Secretary of the Australian Nursing Federation (Victorian Branch); two deans; and two others. The second block consists of actors who listed others only within their own defined areas, who were not nominated by anybody else.

The third block is people either located in public teaching hospitals or La Trobe University.<sup>1</sup> The fourth contains people with a consumer and/or legal focus. The fifth consists of actors located in various universities, research institutes and health-related NGOs. Their commonality seems to be their interest in communities, populations, health promotion and disease prevention rather than individual and curative care. All of the actors in this block had medical qualifications, hence the terminology.<sup>2</sup> The sixth block includes people with current or previous associations with Monash University, and the seventh, people interested in particular diseases or communities (e.g. HIV/AIDS or Aboriginal people). The final block is termed peripheral as these actors nominated highly influential people but were not recognised as very influential themselves.

A diagram of this network structure shows the eight groups arising from the blockmodel (Fig. 1). The lines between the groups have different thicknesses, based on the proportion of possible ties, shown in Table 3. The size of the circles vary according to the mean number of votes per person in that block, ranging from a mean of 17.5 for those in the core group, to 2.3 in defined areas. The core block has the most central position in this network.

Table 3  
Reduced blockmatrix<sup>a</sup>

Block (number in block)	1	2	3	4	5	6	7	8
1. Core influentials (8)	0.23							
2. Defined areas (4)								
3. Hospitals and La Trobe University (9)	0.44							
4. Consumer and legal (4)			0.39					
5. Public health medicine (9)	0.38			0.40				
6. Particular diseases/communities (8)	0.20			0.24				
7. Monash University associated (12)	0.25			0.32				
8. Peripheral but connected (8)	0.34			0.31				

<sup>a</sup>Only proportions of 0.20 and greater are shown for ease of interpretation.

<sup>1</sup>There are two medical schools in the State of Victoria—one at the University of Melbourne and one at Monash University. La Trobe University has a large faculty of health sciences, but this does not include medicine.

<sup>2</sup>Public health as an area of concern is not confined to medicine and is in fact highly multidisciplinary, but all the people in this block had medical qualifications. This label does not indicate that everyone in this group is in the public health medicine faculty of the Royal Australasian College of Physicians.



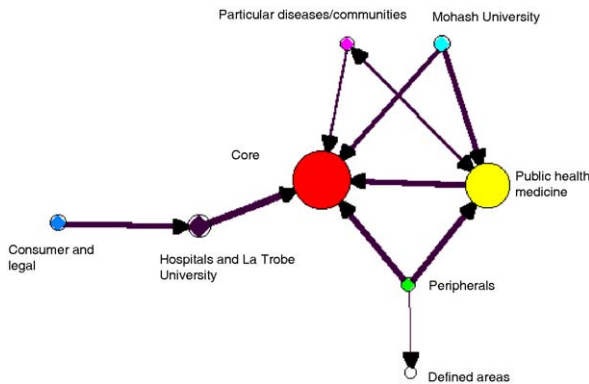


Fig. 1. Network of influence in health.

These actors were nominated by people in all the other blocks except the defined areas and consumer/legal. The Public health medicine block is also central, and actors in this block nominate those in the core block too.

This examination of structural equivalence indicates that there is a central group which contains actors in key positions which are both structurally important and highly visible in health policy in any Australian state. This is not surprising and it seems reasonable to assume that whoever occupied the positions would be widely regarded as influential. The other most central group of Public health medicine is more interesting, because it is a less obviously influential group of people at first glance. These actors are located in universities, research institutes and NGOs, all are medically trained, and eight of these nine are men. This is also the most cohesive group, which along with their common professional training, suggests these ties are homophilous, connecting them to others like themselves.

### Influential individuals

Based on the structure of this network locale, the actors in the two central groups are clearly in the best position to impact on health policy. Those in other groups must find a way to connect in order to wield influence. However, structural equivalence in network terms does not imply that everybody within a block is equally influential. Measuring centrality is one way of determining who the most important individuals within a network are (Degenne & Forse, 1999). A second means used to describe influence was interviews with 20 of these influential people (14

men and six women).<sup>3</sup> They were asked to discuss: what they currently regarded as the most important issues in health policy; who they worked with in relation to these or other issues; and who they had links with more generally. The interviews were tape recorded and transcribed, and quotes are used to highlight different types of connectedness, and their perceptions of the network and their positions within it.

Table 4 contains two measures of centrality for the 12 most central of the 62 actors in this network. The in-degree centrality of an actor indicates the extent to which other actors chose this person as influential. It is the number of ties received by an actor, and hence a measure of the extent to which others see an individual as having important resources. Actors with high in-degree centrality scores are more highly connected and also more highly recognised as having influence of some kind. The table lists actors in rank order of their in-degree centrality.

A second measure is betweenness centrality, which indicates the strategic importance of an actor within a network. Betweenness is defined as the number of non-redundant ties—the number of single ties that connect a person to sub-groups of actors (Krackhardt, 1992). High betweenness centrality means an actor is in a position to act as a gatekeeper or bridge for information flow through a network. Actors with high betweenness centrality link up actors who are otherwise not connected.

Five of these most central actors are academics (including three deans), two are senior bureaucrats, one the CEO of a public hospital group, and one the CEO of VicHealth.<sup>4</sup> The Minister for Health, the Minister's Chief of Staff and the Secretary of the nursing union (the Australian Nursing Federation, Victorian Branch) comprise the rest. The deans head up the in-degree centrality list, along with the

<sup>3</sup>The information from the blockmodel combined with the number of times individuals had been nominated was used to draw up a list of potential interviewees. On the basis of the number of nominations received and coverage of seven of the eight blocks (with the second block excluded), 21 people were selected for interviews. The two senior bureaucrats who received many nominations but did not return nomination forms were also identified as potential interviewees. However, both of these people and one additional person (politician) declined to be interviewed.

<sup>4</sup>VicHealth is the Victorian Health Promotion Foundation—a statutory authority funded by the state government but separate to the state health bureaucracy.

Table 4  
Network measures of centrality<sup>a</sup>

	Centrality in-degree	Centrality betweenness
Dean of Health Sciences, La Trobe University	34	6.6
Minister for Health	28	7.1
Dean of Medicine, Monash University	28	26.2
Dean of Medicine, University of Melbourne	25	1.8
CEO of VicHealth	25	15.9
CEO of Bayside Health	20	12.7
Secretary, Department of Human Services	17	0.4
Chief Health Officer, Department of Human Services	16	3.9
Director, Cancer Council of Victoria	12	5.0
Director, Monash Institute of Health Services Research	12	9.1
Minister's Chief of Staff	12	0.4
Secretary Australian Nursing Federation (Vic)	12	1.4

<sup>a</sup>Those included had an in-degree centrality score of 12 or more.

Minister. The following quote neatly captures the power of one of the most central medical academics:

As a dean I talk to my fellow colleagues as deans. We talk to the Commonwealth. The deans meet with the Commonwealth Health and Aged Care group ... As a dean I get access to the Minister and senior people in DHS [Department of Human Services] and talk to them about these problems.

Another very central actor highlighted his connectedness to other important actors:

I know the Age [newspaper] journalists reasonably well, they use me as a sounding board ... I have reasonably good access to Thwaites [the minister] ... in the minister's office AA is a friend .... [O]f the ministerial advisers, one of them used to work for me ..., in the department [state health bureaucracy] BB I know, CC I know and get on reasonably well with.

The pattern of intermediary influence is somewhat different, with one of the deans of medicine, a hospital CEO and the CEO of VicHealth having the highest scores, making them the best positioned to act in linking roles in the network. One interviewee with a high betweenness centrality score remarked:

[T]his is contact city. I mean, we're just in the middle of lots of things so if people are interested in doing those sorts of things then this can be a networker's paradise.

Interestingly, those in structurally important positions, such as the top health bureaucrat, the top political advisor and the top nursing union

official all have reasonably high recognition as influential, but low betweenness centrality. Less central actors spoke of making attempts to link up with the highly influential. Two quotes from peripheral actors, indicated that they were certainly aware of their positions:

I'm still a little light weight boy out there but that's a pretty heavy group. Even though I sometimes come away thinking we didn't really decide or do anything, it's more by virtue that that group exists and that group sits down and we have dinner together ...

The second indicates an actor who is trying to become more central:

So I'm very much an outsider in terms of established, informal networks anyway and I'm overcoming that bit by bit.

Finally, being associated with a policy area for a long time appears to increase the chances of being regarded as influential. This is related to the notion of preferential attachment in networks. Network growth (the arrival of new actors) does not occur randomly, but on the basis that new attachments are made to those nodes that have been around longer, and to those that are attractive because they are the most popular (Barabasi, 2002). Comments by core influentials about their longevity in and knowledge of the area highlight the importance of this:

I've been around the health system for a long time.

And:

I know how the system works; I know a lot of the players in the system so that's been a huge benefit.

## Discussion and conclusions

During the 1990s it was often argued that medicine had been challenged on a number of fronts, including increased normative and financial pressures, greater scrutiny, and more accountability requirements (e.g. Harrison & Pollit, 1994; Hunter, 1996; Wilsford, 1995). In the State of Victoria a decade ago, economists and their concerns rose substantially in terms of influencing health policy in 1993 (see Lewis & Considine, 1999). The percentage of influentials with medical qualifications fell from 58 in 1991 and 1992 to 34 in 1993, while economists rose from 11 to 38 per cent.

The data reported here, from a decade later, indicates the influence of medicine has risen to a new high of 73 per cent while economists and managers fell to 10 per cent. It now appears that 1993 was unusual and particularly impacted on by the economic concerns of the state which dominated the incoming conservative government's agenda. However, it also seems likely that medical professionals in senior positions are now taking on management and accountability roles themselves (Harrison & Ahmad, 2000).

There is little in this paper to support the claim that medicine's position of influence in health policy making has declined significantly. On the basis of the location of influential actors, the medical professional associations and unions don't rate highly. This is partly structural, because these organisations are more influential at the federal than the state level. The structural analysis points to the importance of individuals located throughout the network who have medical qualifications. Not all of these actors have strong affiliations to 'the profession', but they are strongly connected to other medical (mostly) men, which provides them with crucial roles. They are powerfully connected through their positions and their work on committees, ensuring that their concerns are embedded in the network through homophilous ties, even though organised medicine is not highly visible.

This research has uncovered the cohesiveness and centrality of a group of medical professionals within this sub-graph of the network, despite decades of

policy change aimed at reducing medicine's power. In short, a medical degree still provides a useful entrée into health policy networks, providing personal and positional resources and ties. If there has been an internal restratification within medicine, then doctor-managers seem likely to represent the new breed taking on different roles. Medical expertise is a potent embedded resource throughout this network. The principle of homophily suggests that it takes greater effort to forge ties with those with different resources and less shared sentiments, making it difficult for others to be seen as influential.

Analysing ties between actors sheds new light on influence in health policy. The blending of approaches in this paper has produced a detailed picture that more accurately reflects the complex nature of influence, by examining network structure and the position of individuals within the network. Network concepts and SNA techniques have been used to uncover patterns of connectedness that illustrate which groups of actors are the most influential in policy making, and to unpack inherent personal and positional resources, as well as those based on social ties. While the top political and bureaucratic positions are important, actors with more enduring and informal connections based on shared attributes and longevity in a sector provide the linkages that hold this sub-graph of the network of influence together.

A number of limitations of this research need to be mentioned. First, the network described here represents a focused mapping of one locality of an unbounded network, and not a sample across it. A different starting point could have generated a different network locale. However, the nominations did generate actors in highly visible positions, so the sub-graph mapped here should represent a relatively important part of the network of health policy influence. Second, the relatively low response rate means that the nominations do not necessarily reflect the views of all influentials, although the non-respondents do not differ markedly from the respondents in regard to organisational locations, disciplines and gender. A more serious concern is that two highly nominated actors did not participate. This could have an impact, in that these two individuals could be expected to be highly central. But adding responses from these two actors to the network of 62 is unlikely to disrupt the entire structure described in this paper. Third, people nominated those they know. Since influentials

within a sector are likely to be moving in the same circles, it is not clear whether this is a reflection of the fact that they do mostly know one another, an indication that homophily shaped the nominations, or a distortion of the picture of influence.

Despite these caveats, this research has produced an original way of analysing influence in health policy by examining network structures. It has revealed which individuals have power by virtue of their position in relation to other actors in this network locale. Actors are very aware of their own positions in the network, and their own perceptions of where they sit is in line with their centrality and their intermediary roles. It is not possible to map this kind of unbounded network in its entirety, to sample from it in a traditional sense, or even to absolutely determine its boundaries. But network concepts and SNA techniques provide novel and useful means for understanding the structures of influence which impact on the health policy process.

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