Model or Metaphor? A Critical Review of the Policy Network Approach

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'every science must start with metaphor and end with algebra.'[2]

'I am sorry to say that the subject I most disliked was mathematics. I have thought about it. I think the reason was that mathematics leaves no room for argument.'[3]

1. Introduction

Policy network analysis has become the dominant paradigm for the study of the policy-making process in British political science and has assumed great importance in Europe and America. Recently both *Governance* and *European Journal of Political Research* have had special issues on policy networks,[4] whilst *Policy Sciences* and *International Organization* have each devoted one issue to the related concept of 'advocacy coalitions' and 'epistemic communities'.[5] Two British Social Science Research Council (SSRC) Initiatives were theoretically driven by the network approach and policy networks were a core theme of the 1994 Political Studies Association conference.[6] It is time to take stock: to see how much we have learned about policy-making from this approach, to judge whether it can develop into a genuine and fruitful theory of the policy process or whether a more fundamental theory is required. In this review I argue that whilst we have learned much about the policy process by cataloguing the policy world into different types of network, the approach will not, alone, take us much further. Policy network analysis began as a metaphor, and may only become a theory by developing along the lines of sociological network analysis.

[2] Max Black, *Models and Metaphors* (Ithaca NY, Cornell University Press, 1962), p. 242.

[3] Malcolm X, *The Autobiography of Malcolm X* [with Alex Haley] (New York, Grove, 1964), p. 29.

[4] *Governance*, 2, 1, (1989); *European Journal of Political Research*, 21, 1, (1992).

[5] *Policy Sciences*, 21, 2, (1988); *International Organization*, 46, (1992).

[6] SSRC, *Central-Local Government Relationships* (London, SSRC, 1979); SSRC, *Government and Industry Relationships: a Framework for Analysis* (London, SSRC, 1981). See R. A. W. Rhodes, 'Policy networks: A British perspective', *Journal of Theoretical Politics*, 2 (1990), 293–317, for a brief discussion of these initiatives.

Attempts to provide a 'meso-level' theory,[7] to connect networks with state autonomy approaches,[8] or to drive network analysis by introducing 'ideas' in the form of 'epistemic communities' or 'advocacy coalitions'[9] will all fail to produce fundamental *theories* of the policy process. They fail because the driving force of explanation, the independent variables, are not network characteristics *per se* but rather characteristics of components within the networks. These components explain both the nature of the network *and* the nature of the policy process. General theory may be developed by concentrating upon those characteristics. Theory building in this case will be reductionist. In order to produce a *network* theory; where the properties of the network rather than the properties of its members drives explanation, political science must utilize the sociological network tradition, borrowing and modifying its algebraic methods. This I argue is of limited potential.[10]

2. The Descriptive Approach

From Metaphor

The origin of the terms 'policy community' and 'policy network' is essentially metaphorical. Early metaphors characterizing group-government relations include 'whirlpool'[11] 'sub-governments',[12] 'triangle',[13] 'sloppy hexagon',[14]

[7] David Marsh and R. A. W. Rhodes, 'Policy communities and issue networks: beyond typology' in David Marsh and R. A. W. Rhodes (eds), *Policy Networks in British Government* (Oxford, Oxford University Press, 1992).

[8] Michael M. Atkinson and William D. Coleman, 'Strong states and weak states: sectoral policy networks in advanced capitalist economies', *British Journal of Political Science*, 19 (1989), 47– 67; Michael M. Atkinson and William D. Coleman, 'Policy networks, policy communities and the problems of governance', *Governance*, 5 (1992), 154–80; William D. Coleman, 'State traditions and comprehensive business associations: a comparative structural analysis', *Political Studies*, 38 (1990), 231–52; William D. Coleman and Grace Skogstad, 'Policy communities and policy networks: a structural approach', in William D. Coleman and Grace Skogstad (eds), *Policy Communities and Public Policy in Canada* (Toronto, Copp Clark Pitman, 1990), Martin Smith, *Pressure Power and Policy: State Autonomy and Policy Networks in Britain and the United States* (Hemel Hempstead, Harvester Wheatsheaf, 1993).

[9] Paul A. Sabatier, 'Knowledge, policy-oriented learning, and policy change: an advocacy coalition framework', *Knowledge, Creation, Diffusion, Utilization*, 8 (1987), 648–92; Paul A. Sabatier, 'An advocacy coalition framework of policy-change and the role of policy-oriented learning therein', *Policy Sciences*, 21 (1988), 129–68; Paul A. Sabatier and Neil Pelkey, 'Incorporating multiple actors and guidance instruments into models of regulatory policy-making: an advocacy coalition framework', *Administration and Society*, 19 (1987), 236–63 and Paul A. Sabatier and Hank C. Jenkins-Smith (eds), *Policy Change and Learning: An Advocacy Coalition Approach* (Boulder, Westview 1993). For 'epistemic communities' see the essays in *International Organization*, 46, 1 (1992) [special issue Peter M. Haas (ed.), *Knowledge, Power and International Policy Coordination*].

[10] Due to misunderstanding of an earlier paper, Keith Dowding, 'Policy networks: don't stretch a good idea too far', in Patrick Dunleavy and Jeffrey Stanyer (eds), *Contemporary Political Studies, 1994 vol. 1* (Belfast, The Political Studies Association of the United Kingdom, 1994), where I was taken to be lauding sociological network analysis I wish to reinforce this point. Sociological network analysis does constitute a reasonable model since network characteristics do stand as independent variables. How *useful* a model it will prove to be is, logically, a separate issue.

[11] Ernest S. Griffiths, *The Impasse of Democracy* (New York, Harrison-Wilton, 1939).

[12] David Truman, *The Governmental Process* (New York, Knopf, 2nd ed., 1971); Douglas Cater, *Power in Washington* (New York, Random House, 1964); J. Leiper Freeman, *The Political Process* (New York, Random House, 1965).

[13] Cater, *Power in Washington*.

[14] Charles O. Jones, 'American politics and the organization of energy decision-making', *Annual Review of Energy*, 4 (1979), 99–121.

'webs',[15] and 'iron triangles'.[16] The 'iron triangle' concept took off in the United States to depict relations between the relevant executive agency, the relevant congressional subcommittee and interest group organizations. By 1978 Heclo complained that the metaphor was misleading and introduced the notion of 'issue networks' to suggest a less close-knit community.[17] Earlier Heclo and Wildavsky had used the idea of policy communities, suggesting that these develop around a shared framework of understandings.[18] All of these different terms were used to elucidate the same essential features of policy-making; that the distinction between public and private organizations was flexible, the pattern of linkages within a sector affected policy outcomes, and the sub-governmental level was most important for understanding the detail of policy formation and the success of policy implementation.

Developing the US literature for Britain, Richardson and Jordan initially used the concepts of 'policy network' and 'policy community' interchangeably to indicate the close links between civil servants and favoured interest group organizations.[19] In 1979 they saw policy communities within broad policy areas such as education, transport and local government but by 1982 they had introduced a more institutionally based conception arguing that policy communities are best seen as commodity-based, focused on sections, at widest divisions, of government departments.[20] This develops from the idea, contained in the earlier work, that communities are distinguished by *commonality of interest*.

Policy community is understood in all the literature in some sense as a common culture and understandings about the nature of the problems and decision-making processes within a given policy domain. Jordan and Richardson's use of the term is essentially metaphorical and they made no great claims to theoretical advancement.[21] They saw policy-making as a series of vertical components sealed off from other aspects of the policy process – other groups and departments, the public and parliament. Their argument fractured the standard evaluation of pressure group/government relations as a bilateral bargain, extending analysis into domains where the state/society distinction is not so hard-edged. They dissected the political world against the prevailing

[15] G. Peters, *American Public Policy* (Basingstoke, Macmillan, 2nd ed., 1986).

[16] R. Ripley and G. Franklin, *Congress, the Bureaucracy and Public Policy* (Homewood, Dorsey, 2nd ed., 1984), p. 16.

[17] H. Heclo, 'Issue networks and the executive establishment', in A. King (ed.), *The New American Political System* (Washington, DC, American Enterprise Inc., 1978).

[18] Hugh Heclo and Aaron Wildavsky, *The Private Government of Public Money* (London, Macmillan, 1974).

[19] J. J. Richardson and A. G. Jordan, *Governing under Pressure: British Politics in a Post-Parliamentary Democracy* (Oxford, Martin Robertson, 1979); A. G. Jordan and J. J. Richardson, *Government and Pressure Groups in Britain* (Oxford, Clarendon, 1987); A. G. Jordan and J. J. Richardson, *British Politics and the Policy Process* (London, Unwin Hyman, 1987).

[20] See J. J. Richardson (ed.), *Policy Styles in Western Europe* (Hemel Hempstead, George Allen and Unwin, 1982) and more recently A. G. Jordan, W. A. Maloney and A. McLaughlin, 'Assumptions about the role of groups in the policy process: the British policy community approach', *British Interest Group Project Working Papers*, 4 (Aberdeen, Aberdeen University Press, 1992); 'Policy-making in agriculture: "primary" policy community or specialist policy communities?', *British Interest Group Project Working Papers*, 5 (Aberdeen, Aberdeen University Press, 1992); and 'Characterizing agricultural policy-making' (MS, 1993).

[21] See A. G. Jordan, 'Sub-governments, policy communities and networks: refilling the old bottles?', *Journal of Theoretical Politics*, 2 (1990), 319–38, for the history of their approach.

cleavages of British political science. The measure of their success is the strength of the response from institutionalists who argue for the continued importance of studying Parliament and other institutions.[22] Neither Richardson nor Jordan has attempted to categorize policy networks, policy communities, issue networks or other similar terms into formal typologies. They adopted a relaxed metaphorical usage based on certain characteristics they noted within policy-making arenas. This is very much in the spirit of the analytic group theory of Truman and the metaphors of the earlier work.[23] Jordan and Richardson argued that the depth of communities may vary across policy domain in the same nation and different nations may have different policy styles. Recently Richardson has proposed that a theory of the transformation of policy communities is required in order to understand the dynamics of radical policy change in Britain. In a case study of water privatization Richardson *et al.* describe the process with which the water policy community failed to agree over the details of privatization particularly with regard to regulation.[24] As this occurred other actors, including environmental groups and the EC became involved in a more confused issue network, until the government, with its eye on a forthcoming General Election and determined to save its privatization plans decided to create the National Rivers Authority without attempting consensus. From that decision the policy community re-created itself in different institutional circumstances. Whilst an important case-study this article reveals the major problem with the policy network literature. Whilst the metaphors are heuristically useful, as they have to be if they are to be metaphors, they are incapable of explaining transformation.[25] All we learn from the study in network terms is that if a policy community breaks down an issue network evolves and other groups are able to enter the policy process more forceably. But it does not explain community breakdown, nor issue network transcendence, nor the dynamics of the change. And it cannot do so, for part of what is to be explained is the creation and destruction of communities. The imagery is simply metaphorical heuristics, though no less serviceable for that.

To the 'Rhodes Model'

Attempts have been made within the descriptive approach to go beyond metaphor and provide theories of the policy process in network terms. Two rival developments of the policy network approach developed in Britain around the two SSRC Initiatives. The first was based upon the work of Rhodes and was, originally, specifically concerned with relations between the central British state and governance in the periphery.[26] The second was developed by Wilks

[22] Michael Rush (ed.), *Parliament and Pressure Groups* (Oxford, Oxford University Press, 1990); David Judge, *The Parliamentary State* (London, Sage, 1993); Philip Norton, *Does Parliament Matter?* (Hemel Hempstead, Harvester Wheatsheaf, 1993).

[23] Going back as far as Arthur Bentley, Peter Odegard (ed.), *The Process of Government* (Cambridge, MA, Belknap, 1967; first pub. 1908), p. 261, government is seen as a 'network of activities'.

[24] Jeremy J. Richardson, William A. Maloney and Wolfgang Rudig, 'The dynamics of policy change: lobbying and water privatization', *Public Administration*, 70 (1992), 157–75.

[25] As suggested by Patrick Dunleavy, 'The limits to local government' in Martin Boddy and Colin Fudge (eds), *Local Socialism?* (London, Macmillan, 1984), p. 60.

[26] R. A. W. Rhodes, *Control and Power in Central-Local Relations* (Farnborough, Gower, 1981); *The National World of Local Government* (London, Allen and Unwin, 1986); R. A. W. Rhodes,

and Wright in order to explain the complex nature of industrial policy-formation seen in many European nations.[27] They believed that policy networks were best seen as personal relations of small groups of political actors, rather than visualizing networks as part of wider explanations of the nature of the modern state. They perceived fewer differences in the policy process across nations than had Jordan and Richardson and believed that the key aspects of the process occurred at a micro- or individual level. The conflict which developed over how the terms should be used is but a phoney war of words hiding a deeper conflict over the nature of social explanation and the role of state theorizing.[28] I will use the term 'policy network' as a generic category and 'policy communities' and 'issue networks' as subsets. This is a choice based upon convenience rather than a belief that it is 'correct'. Elsewhere I have characterized the dispute over the correct appellation of policy networks and policy communities as 'a naturalistic fallacy' where the various schema are defended as though the ontology of the world depends upon them.[29] Underlying this dispute is an argument about the nature of the state. The Wilks-Wright team attacked the notion of grand theories of the state arguing that in the sectors they analysed across Europe there was little correlation between the degree of government intervention in different nations and the categorization of the state in those nations as interventionist or non-interventionist.[30] Rhodes and Marsh on the other hand want to integrate policy network analysis with grand theories of the state, seeing it as a 'meso-level' theory lying between micro-level theories such as rational choice and macro-level state theory.[31]

The problem here is with the very idea of a 'theory of the state'. There is a misapprehension about the nature state theorizing. A true theory must be generalizable to all objects to which it is supposed to be applicable. It should be able to explain variance between those objects as well as explaining similarities. Too often different state theories are about different types of

Footnote 26 Continued]
Beyond Westminster and Whitehall (London, Unwin Hyman, 1988). Other books which grew out of the initiative include: S. Barrett and C. Fudge (eds), *Policy and Action* (London, Methuen, 1981); M. J. Goldsmith (ed.), *New Research in Central-Local Relations* (Aldershot, Gower, 1986); J. Gyford and M. James, *National Parties and Local Politics* (London, Allen and Unwin, 1983); M. Laffin, *Professionalism and Policy: the Role of the Professions in the Central-Local Government Relationship* (London, Gower, 1986); S. Ranson, G. W. Jones and K. Walsh (eds), *Between Centre and Locality* (London, Allen and Unwin, 1985).

[27] Steven Wilks and Maurice Wright (eds), *Comparative Government-Industry Relations* (Oxford, Clarendon, 1987); Maurice Wright, 'Policy community, policy network and comparative industrial policies', *Political Studies*, 36 (1988), 593–614; Steven Wilks, 'Government-industry relations', *Public Administration*, 67 (1989), 329–39. Other publications from the initiative include A. Cawson, K. Morgan, D. Webber, P. Holmes and A. Stevens, *Hostile Brothers: Competition and Closure in the European Electronics Industry* (Oxford, Clarendon, 1988); Wyn P. Grant, William Paterson and Colin Whitson, *Government and the Chemical Industry: a Comparative Study of Britain and West Germany* (Oxford, Clarendon, 1988); L. Hancher and M. Moran (eds), *Capitalism, Culture and Economic Regulation* (Oxford, Clarendon, 1989). For my criticisms of the Wilks-Wright model, see Keith Dowding 'Policy networks'.

[28] See Dowding, 'Policy networks'.

[29] Dowding, 'Policy networks', pp. 62-4.

[30] See especially A. Cawson, P. Holmes and A. Stevens 'The interaction between firms and the state in France: the telecommunications and consumer electronic sectors', in Wilks and Wright, *Comparative Government-Industry Relations*; and Cawson *et al.*, *Hostile Brothers*.

[31] David Marsh, 'Beyond new institutionalism: meso-level analysis is all very well but let's not lose sight of the macro questions' (ECPR Joint Sessions, 30 March–4 April, 1992, Limerick).

state – thus some states are seen as more pluralist than others, some as more elitist than others, some as more autonomous than others. But if this is so then none of the 'theories' is about 'the state'. You cannot have a theory about dogs which only applies to alsatians and not poodles, then study two dogs and conclude that one is more poodle-like and another more alsatian-like. That is not a theory; it is a system of classification.[32] Any theory of the state must specify how we expect different actors (institutions, people, groups or whatever) to behave *under different institutional arrangements.* Few extant so-called theories of the state do this.[33]

Similarly other writers have attempted to provide classicatory schema where states are catalogued according to various criteria.[34] Van Waarden catalogues networks along seven dimensions according to (1) actors, (2) function, (3) structure, (4) institutionalization, (5) rule of conduct, (6) power relations and (7) actor strategies. He then lists eleven types of network and catalogues them according to the seven criteria demarcated into 37 sub-categories.[35] This lepidopterist approach to political science does not help explanation of the political institutions or policy outcomes unless it is connected somehow with dynamic models linking the sub-categories in structural or causal explanations. In the Rhodes model for example, despite claims about 'meso-level' theorizing, the explanatory work is largely done at the micro-level in terms of properties of the actors and not in terms of properties of the network. Rhodes's original typology categorizes policy networks along a continuum from policy communities at one end, through professional networks, inter-governmental networks and producer networks to issue networks, at the other end. An updated Rhodes-Marsh typology (Table 1) offers formal definitions for demarcating the world into different types of network.[36] The heuristic value of such definitional categorization depends upon the ability to construct a proper model which causally relates the characteristics to each other and to different types of policy outcome. The problem for the original Rhodes typology and the updated Rhodes-Marsh version in Table 1 is that it does not distinguish dependent and independent variables. For example, in the dimension 'Type of Interest' policy community is contrasted with issue network on the grounds that the former have economic or professional interests dominating, whereas the latter encompasses a broad range of interests. In the dimension 'Consensus' there is said to be a general acceptance of the legitimacy of the outcome and a sharing of basic values within policy communities but conflict ever present in issue networks. Surely the reason why integration can be contrasted through the two types of

[32] More realistically one cannot have a theory about living creatures which does not apply to insects, though one may have a theory about warm-blooded animals which does not apply to insects. Even here, one would be seeking more fundamental theories, such as the difference warm blood makes. Analogously a theory about democratic states needs a more fundamental ('micro-level' if you like) theory about the behavioural difference democracy makes to the actions of institutions, groups, and so on.

[33] Of those on offer only new right and Marxist approaches seem to avoid this criticism: see for example Patrick Dunleavy and Brendan O'Leary, *Theories of the State* (Houndmills, Macmillan, 1987).

[34] For example Atkinson and Coleman 'Strong states and weak states' and virtually the whole corporatist literature.

[35] Frans van Waarden, 'Dimensions and types of policy networks', *European Journal of Political Research*, 21 (1992), 29–52.

[36] See Marsh and Rhodes, 'Policy communities and issue networks' for this updated typology.

TABLE 1. Types of Policy Networks: Characteristics of Policy Communities and Issue
Networks

Dimension	Policy Community	Issue Network
Membership		
Number of participants	Very limited number, some groups consciously excluded	Large
Type of interest	Economic and/or professional interests dominante	Encompasses range of affected interests
Integration		
Frequency of interaction	Frequent, high-quality, interaction of all groups on all matters related to policy issues	Contacts fluctuate in frequency and intensity
Continuity	Membership, values, and outcomes persistent over time	Access fluctuates significantly
Consensus	All participants share basic values and accept the legitimacy of the outcome	Some agreement exists, but conflict is ever present
Resources		
Distribution of resources (in network)	All participants have resources basic relationship is an exchange relationship	Some participants may have resources, but they are limited basic relationship consultative
Internal distribution	Hierarchical; leaders can deliver members	Varied, variable distribution and capacity to regulate members
Power	There is a balance of power among members. Although one group may dominate, it must be a positive-sum game if community is to persist	Unequal powers, reflecting unequal resources and unequal access – zero-sum game

Source: D. Marsh and R. A. W. Rhodes (eds), *Policy Networks in British Government*
(Oxford, Oxford University Press, 1992), p. 251.

network is because of the distinction between the types of interest. In order
truly to go beyond typology the causal relationships between the entries in
Table 1 need to be modelled. As used by adherents to the Rhodes model 'policy
community' and 'issue network' are merely labels attached to an explanation
of differences between policy formation in different policy sectors. The labels
do not themselves explain the difference. The explanation lies in the character-
istics of the actors. We can see this with regard to some examples drawn from
case studies largely drawn from two books edited by Rhodes and Marsh.[37]

Cunningham examines the case of sea defences, often thought of as a
professionalized network.[38] She finds a professionalized network only in the

[37] Marsh and Rhodes, *Policy Networks in British Government*; and David Marsh and R. A. W.
Rhodes, *Implementing Thatcherite Policies: Audit of an Era* (Buckingham, Open University Press,
1992). I have simplified all the following cases, but maintain that the analysis is applicable to more
complex versions.
[38] Caroline Cunningham, 'Sea defences: a professionalized network?', in Marsh and Rhodes,
Policy Networks in British Government.

sense that much of the debate is over 'technical' issues, such as the strength of sea defences – should a once-in-a-hundred-years breach of defences be acceptable, or do we need once-in-a-thousand-years defence? If the former, should we ensure that sea walls are constructed to ensure that they remain standing after 'overtopping' by the sea? In her case-study of a small peninsula on the south-east coast battle is engaged between the Local Land Drainage Committee (LLDC), the Regional Land Drainage Committee (RLDC), the River Water Authority (RWA) and the Ministry of Agriculture, Food and Fisheries (MAFF), the latter two involved in supplying grant aid under the 1976 Land Drainage Act. The story is familiar to virtually any study in political science. MAFF and the intermediary RWA award grants for different local schemes. They tend to prefer cheaper solutions. The LLDC (in this case composed entirely of people who suffered the great floods of 1953) wants the most comprehensive coverage. The RLDC, acting as something of a go-between the LLDC and grant-awarders, wants to secure its bargaining position with MAFF and RWA by ensuring that all LLDCs utilize the same standards for sea defences.

Cunningham's analysis proceeds by examining the bargaining strategies and resource powers of the various actors. The LLDC used the arguments of its engineers and asserted its constitutional rights to proceed with its favoured scheme, though having to find a substantial amount of the expenditure from its own resources. MAFF simply relied upon its own technical experts and refused to supply grants where it disagreed with the scheme. Following defeat, the RWA and RLDC attempted to reassert some control by restating their central policies and persuading LLDCs to accept that success in getting grants depends upon a united front. Cunningham analyses this issue in terms of the resources of (a) money (or ability to raise, award or withhold money), (b) legitimacy (constitutional rights to make certain types of binding decisions), (c) coalition strength (within the RWA and RLDC) and (d) knowledge (through the technical issues). The final power, knowledge, seems the least important in this network since both sides had professional experts willing to defend the opposing schemes.

A broader 'professional network' is the case of health.[39] Here the general policy analysis has been that the professionals have long dominated health policy and dynamic change has only occurred as dominant professional views have altered over time.[40] However, a sustained assault upon the professional community has led in Britain to the creation of the internal health market, budget-holding GPs, hospital trusts, a new NHS Management Executive chaired by the Secretary of State for health, and the introduction of new managerial methods and greater control for managers as opposed to senior doctors.

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[39] Gerald Wistow, 'The Health Service policy community: professionals pre-eminent or under challenge?', in Marsh and Rhodes, *Policy Networks in British Government* and Gerald Wistow, 'The National Health Service' in Marsh and Rhodes, *Implementing Thatcherite Policies*.

[40] R. A. Alford, *Health Care Politics* (Chicago, Chicago University Press, 1975); Rudolph Klein, *The Politics of the National Health Service* (Harlow, Longman, 1983); Stephen Harrison, David J. Hunter and Christopher Pollitt, *The Dynamics of British Health Policy* (London, Unwin Hyman, 1990); Stephen Harrison, David J. Hunter, Gordon Marnoch and Christopher Pollitt, *Just Managing: Power and Culture in the National Health Service* (London, Macmillan, 1991).

Wistow suggests that whilst the essential nature of the relationship between doctors and managers has not altered 'in relation to the clinical activities of the former', 'the influence of corporate rationalizers over professional monopolizers has not only grown but has been largely accepted by the latter'.[41] Wistow also demonstrates that the government was able to change the nature of health policy by ignoring or bypassing the policy community: 'The Prime Minister's review was conducted by a small team of ministers with external inputs that were minimal, certainly in the established consultation mode. After its publication, the Secretary of State emphasized that the task of the service was to elaborate the details of implementation but not to question the underlying framework'.[42] At the end of the day, the material power and legitimacy of elected government can ride roughshod over any policy community. Dohler suggests that as a result of previous decisions policy networks produce interactions which constrain or enable future change.[43] This then translates to the explanation that the British government was able to change health policy because the NHS was hierarchical, whilst the US was able to deregulate because its system was so diffuse to begin with. This explanation barely requires the network metaphor.

The intellectual insight behind the Marsh and Rhodes *Implementing Thatcherite Policies* collection, however, is that making policy is one thing, implementing it another. To ignore the affected interests in any policy arena may make one's policy otiose. How far the health service plans of the Conservative administration will bear the fruit they desire will be seen in the coming years. In another policy arena, education, where the government rode roughshod over professional interests, it has already backtracked somewhat. In this case the strategy was to attack the power resources of the educational establishment, suggesting that teachers' unions were led by Marxists, that teaching policy in schools was driven by 'trendy' ideas created by teacher training in universities set up during the 1960s heyday of left-wing ideological hegemony and that in the end parents know best. These tactics were typified by the Secretary of State's slanderous assault upon a leading educationalist describing him as a 'nutter' and saying 'I fear for Birmingham with this madman let loose, wandering around the streets, frightening the children'. Clearly these tactics were designed to undermine the legitimacy of teachers, their unions, teaching establishments and educationalists to speak with a professional voice on the care of children their major power resource.

Their other main power resource, of course, was withdrawal of labour. Breaking up the pretence of corporatist state-level negotiation was one of the first acts of the Conservative government on gaining power in 1979. The declining power base of trade unionism altered the nature of British policy networks. A diminishing ability to call strikes was not the only way in which trade unions lost power in the 1980s. They once had much greater legitimacy than they now enjoy. Falling membership means that they can less often claim to speak as the authoritative voice of workers, and they lost legitimacy in

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[41] Wistow, 'Health Service policy community', p. 72.

[42] Wistow, 'Health Service policy community', p. 73.

[43] Marian Dohler, 'Policy networks, opportunity structure and neo-conservative reform strategies in health policy' in Bernd Marin and Renate Mayntz (eds), *Policy Networks: Empirical Evidence and Theoretical Considerations* (Boulder CO, Westview, 1991).

the eyes of the public at large through unpopular strike activity and an overwhelming propaganda effort by government.[44]

In other policy areas the power resources of the relevant actors vary to a large degree. Ward and Samways show that when costs and benefits are socially diffuse it is harder for affected groups to organize collectively and use any latent resources.[45] The environment is a classic case of agenda-management: the government acts only when the issue flares up ignoring it when it subsides. Agriculture is a more complex issue for at first it may seem hard to explain why farming interests have been so powerful for so long. Here entrenched groups have had their interests served by government due to agreements made during wartime when farming in marginal areas was of national importance. More recently the dominance of the Common Agricultural Policy in EC matters has led to policy immobilism. Identifying a 'closed' policy community is not explanation but redescription; analysis requires consideration of the bases of power of farming interests and the recognition of their 'systematic luck'.[46] Policy community 'closure' is one of the elements in need of explanation.

The nature of the policy process and the network of interests from which it emerges in the above examples can be explained without recourse to the language of networks. The language above is that of bargaining strategies, power resources and coalition possibilities. This is not to deny that the policy network metaphor has no role to play, but it is to deny that it forms the centrepiece of explanation. Policies emerge through power struggles of different interests, both within zero-sum and variable-sum contexts, and within battles of what Marin has described as 'antagonistic cooperation'.[47]

The nature of power exchange in fact holds together the 'Rhodes model', at least in its initial specification, in the form of the 'power dependency model'.[48] This specification resembles the foundational argument of this review, that the bargaining model and game theory can be fruitfully applied to understand the nature of policy networks. Rhodes pithily explains the power-dependency thesis:

> Central-local relations take on aspects of a 'game' in which both central and local participants manoeuvre for advantage, deploying the resources they control to maximize their influence over outcomes and trying to avoid becoming dependent on the other 'players'.[49]

[44] See David Marsh, *The New Politics of British Trade Unionism: Union Power and the Thatcher Legacy* (Houndmills, Macmillan, 1992).

[45] Hugh Ward and David Samways 'Environmental policy', in Marsh and Rhodes, *Implementing Thatcherite Policies*.

[46] See Keith Dowding, *Rational Choice and Political Power* (Aldershot, Edward Elgar, 1991), for discussion of 'systematic luck' and the case of British farmers.

[47] Bernd Marin (ed.), *Generalized Political Exchange: Antagonistic Cooperation and Integrated Policy Circuits* (Boulder CO, Westview, 1990).

[48] Rhodes, *Control and Power in Central-Local Relations*; R. A. W. Rhodes ' "Power dependence" theories of central local relations: a critical assessment' in Goldsmith, *New Research in Central-Local Relations*; Rhodes, *Beyond Westminster and Whitehall*. I am rightly accused of ignoring the power dependence model in 'Policy networks' by R. A. W. Rhodes and David Marsh, 'Policy networks: "defensive" comments, modest claims, and plausible research strategies' paper to PSA Annual Conference, Swansea, March 1994. However, 'power-dependence' does not rate a citation in the index of either of the Marsh and Rhodes edited collections supposedly using the Rhodes model.

[49] Rhodes, *Beyond Westminster and Whitehall*, p. 42.

This is a perfect characterization of the nature of politics within a bargaining framework. But such an approach should lead the researcher to concentrate upon the resources that actors need to enter this game. These resources include, (1) knowledge or information, (2) legitimate authority, (3) unconditional incentives to affect the interests of others, (4) conditional incentives to affect the interests of others, and (5) reputation.[50] It is unclear why the 'Rhodes model' developed away from considering the resources of actors in a game over policy outcomes. Rhodes seemingly believes that concentration upon actors' resources shifts attention to the 'micro-level' and away from macro-processes such as socialization and the general form of power and interest in society:

> They [critics of power-dependency with whom Rhodes sympathizes] call for a theory of bargaining tactics *and* a theory able to capture the interactions, tactics, and sub-processes of negotiation that surround the act of bargaining itself . . . Thus a focus on the distribution of resources between actors and on the socialization of actors into certain ideologies should link the analysis of negotiative behaviour to the macro-level power-interest structure of society.[51]

This then leads to his call for a 'meso-level' level of analysis. Perhaps Rhodes should not have been so sympathetic to his critics. Bargaining theory both is a theory of rational tactics and a way of describing the interactions which then take place. Whilst economists have tended simply to assume that actors have preferences and *then* model their behaviour, this is not incompatible with a theory of preference formation. New institutional economics does consider the role of preference formation given the underlying structure of resources and property rights in any given society. The Harsanyi bargaining model allows for understanding how bargainers can unconditionally change the incentive structures of other groups. For example, a headmistress and governing body which control a limited budget for their school may well take a different attitude towards a demand for a national pay-rise than if the budget is controlled by a local authority. Shifting responsibilities shapes preferences. Conditional incentives also shape preferences. Conditional incentives come in the form of threats, offers and throffers; whilst a less subtle form of preference-shaping, they are often just as effective. Analysis of policy networks and the structures of bargaining tactics can capture the various ways in which preferences are formed.[52]

   This form of bargaining analysis can be applied to persons, to organizations or even, with some modification, to more amorphous groupings such as social class and producer-consumer relations. It is not, as Rhodes seems to think, a 'micro-level' analysis, though it is true that most people who work with these

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[50] See Dowding, *Rational Choice and Political Power* for discussion of these; the first four are based on the work of J. C. Harsanyi, 'Measurement of social power, opportunity costs and the theory of two-person bargaining games' and 'Measurement of social power in *n*-person reciprocal power situations', in his *Essays on Ethics, Social Behaviour and Scientific Explanation* (Dordrecht, Reidel, 1976), the last on modern bargaining theory: see for example Eric Rasmusen, *Games and Information* (Oxford, Blackwell, 1991). The key issue here is that concentrating upon bargaining resources, *however they are specified*, is more fruitful than trying to explain outcomes in terms of different types of network.

[51] Rhodes, ' "Power dependence" theories', p. 8.

[52] This can also be applied to broad categories such as ideology: see Dowding, *Rational Choice and Political Power*, ch. 7; and Raymond Boudon, *The Analysis of Ideology* (Cambridge, Polity, 1989).

types of models believe that applications at the macro-level require micro-level roots to explain the causal processes at work therein. There is no need for meso-level theory between the two, but merely for an analytic theory which produces testable empirical implications under different conditions.

3. Preference Formation and Advocacy Coalitions

Envisioning the policy process and a bargaining game between different types of actors is the traditional approach of much of political science. In most of mainstream political science and certainly within economics, little consideration is devoted to the generation of interests. Yet the first collective action problem that any group needs to overcome is the identification of its interests.[53] Rhodes perhaps shied away from the power dependency elements of his model because of doubts about its ability to capture the way in which preferences are formed. A similar concentration upon the generation of preferences motivates the approaches which have developed from the policy sciences literature. This literature has always been concerned with normative questions around policy formation – notably rational decision-making and technical issues over policy formulation and implementation. Critiques of the very possibility of rational policy-formation because of the socially constructed nature of knowledge have dominated this area in recent years. They stimulated the study of the generation of policy ideas from technical experts and professionals. From this grew the idea of epistemic communities and advocacy coalitions.

The advocacy coalition framework has four defining features.[54] First, that understanding policy change requires a time perspective of at least a decade. Secondly, that we need to concentrate upon the policy network. Thirdly, that we need to understand change through an intergovernmental framework, that is we should not concentrate attention institutionally between central, regional and local levels of government.[55] Finally, that public policies can be conceptualized as belief systems. It is the final element which most distinguishes this approach and on which I will concentrate attention.

The essential element of seeing public policy as a belief system is that beliefs change over time given the external environment around people. Issues emerge through changes in the environment, often as a shock or crisis, such as the oil crisis of the mid-1970s. This causes a re-evaluation of the belief system about public policy and new interest groups emerge. These groups form coalitions which over time may agree on a policy solution, not simply, though sometimes, through the give-and-take of bargaining, but also because their beliefs about the correct solution converge. Professionals working in a given area may come to dominate the thinking of virtually all interested parties, though rival advocacy coalitions may use different expert advice. The importance of expert advice in foreign policy is the essential element of the 'epistemic communities' literature. This tries to explain how international policy has converged in a number of areas such as GATT, environmental issues, food aid, the world

[53] Dowding, *Rational Choice and Political Power*, ch. 3; Keith Dowding, 'Rational mobilization' in Patrick Dunleavy and Jeffrey Stanyer (eds), *Contemporary Political Studies, 1994 vol. 2*.

[54] Paul A. Sabatier, 'Policy change over a decade or more' in Sabatier and Jenkins-Smith (eds), *Policy Change and Learning*, p. 16.

[55] This is another defining feature of Rhodes's work.

economy, and regulation in banking.[56] Again the fundamental ideas behind epistemic communities are to see the emergence of belief systems leading to policy convergence rather than seeing international agreements as the result of power bargaining games between self-interested nation-states.[57]

The advocacy coalition literature has a more developed account of belief systems, which are thought to be composed of a set of core beliefs which will remain unchallenged; for example the primacy of the environment over economic growth for environmentalists, and the primacy of growth over the environment for capitalists; and a set of policy beliefs about how best to protect one's core beliefs. There is room for compromise over the policy beliefs, for example environmentalists and builders may agree to limited development in a given area. But such agreements may break down once room for compromise is over, say, the potential for limited development is ended and developers want to continue into new areas. Munro discusses California water politics and shows how in the 1960s room for compromise between two sets of advocacy coalitions made brokerage by successive governors impossible.[58] Similarly this contest between environmentalists and capitalists broke from uneasy compromise to open battle in Sabatier's story of Lake Tahoe.[59]

An excellent account of two policy coalitions – environmental groups such as the Audobon Society and the Sierra Club, and the major oil companies battling for the support of four government agencies, Department of the Interior (DOI), Department of Energy (DOE), the Environmental Protection Agency (EPA) and National Oceanic and Atmospheric Administration – is contained in Jenkins-Smith and St. Clair's analysis of the politics of offshore energy.[60] Jenkins-Smith and St. Clair built up an ideological map of the groups over time. They chart them in four time-periods and demonstrate changes in three broad coalitions of the environmental groups, the oil companies and trade associations, and the governmental agencies occupying ground between the two. In the first time period there exists a tight conservation group, a slightly more diverse pro-development group (including the DOE) with the EPA closer to the environmentalists and the DOI closer to the developmentalists. Under Carter the DOI and DOE switched positions and both moved closer to the environmentalists. With the onset of the energy crisis the government agencies moved back to the pro-development fold and the environmental coalition also

[56] William J. Drake, 'Ideas, interests, and institutionalization: "trade in services" and the Uruguay round'; M. J. Peterson, 'Cetologists, environmentalists, and the international management of whaling'; Peter M. Haas, 'Banning chlorofluorocarbons: epistemic community efforts to protect stratospheric ozone'; Raymond F. Hopkins, 'Reform in the international food aid regime: the role of consensual knowledge'; Ethan Barnaby Kapstein 'Between power and purpose: central bankers and the politics of regulatory convergence'; and G. John Ikenberry, 'A world economy restored: expert consensus and the Anglo-American post-war settlement' all in *International Organization* 46, 1 (1992).

[57] See especially James K. Sebenius, 'Challenging conventional explanations of international cooperation: negotiation analysis and the case of epistemic communities', *International Organization*, 46 (1992), 323–66.

[58] John F. Munro, 'California water politics: explaining policy change in a cognitively polarized subsystem' in Sabbatier and Jenkins-Smith, *Policy Change and Learning*.

[59] Paul A. Sabatier, 'From vague consensus to clearly differentiated coalitions: environmental policy at Lake Tahoe, 1964–1985', in Sabatier and Jenkins-Smith, *Policy Change and Learning*.

[60] Hank C. Jenkins-Smith and Gilbert K. St. Clair, 'The politics of offshore energy: empirically testing the advocacy coalition framework' in Sabatier and Jenkins-Smith, *Policy Change and Learning*.

became less tightly knit. In the final period, once again, the system had become increasingly polarized, with the coalition groups tighter-knit but remaining just as far away from each other. Jenkins-Smith and St. Clair conclude that this analysis shows the importance of exogenous shocks to the system, and the importance of core sets of beliefs. We might also note the significant role of change in the White House, and that opposed coalitions form tighter bonds when it becomes more difficult to broker compromise. This study tells us little about the power of different groups, including government agencies, to shape policy, apart from suggesting that changes in the external environment affect power, though it does demonstrate the usefulness of quantitative techniques to map the relationship of different coalitions. This approach therefore does not seem to be a *rival* to those examining the bargaining power of different groups in different institutional settings. The focus of the research problem seems rather different.[61]

In some policy-areas there may be virtual unanimity over the correct solution. Brown and Stewart demonstrate that over a period of twenty years, the issue of airline deregulation in the US altered from should we deregulate, to how are we going to deregulate, to in the 1980 presidential election how good at deregulation was Carter versus how much better would Reagan be.[62] Similarly in Britain we can see how views on management of the macro-economy have changed from the time of the famous letter to *The Times* signed by 364 economists against the Conservative government's economic policies.[63] Wickham-Jones is correct in his argument that monetarism triumphed not because of the quality of its ideas but because of political power within the Conservative Party; the coalition welded together transformed the dominant assumptions. Only recently have ideas in the Labour Party about full employ-ment re-emerged as a credible alternative economic package to some form of monetarist policy. Another example is Barke's account of changes in Federal communications policy.[64] He suggests that the views of the Federal Communi-cations Commission, largely insulated from dominant political forces in the White House and Congress, changed over time largely because of technological innovation and a sea-change in general attitudes towards the market's ability to ensure quality.

The importance of this approach can be seen when we consider how some policy arenas seem to generate policies which are against the grain of the ideology of the government of the day. Think of the 1989 'Children's Act' which seemingly ties the hands of social workers and the police when dealing with criminalized children. How was this passed by a 'hang 'em and flog 'em' Thatcherite Conservative government? It was helped by the publicity given to child molestation at this time, but was inspired by a policy community of

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[61] The different focus of institutional rational choice and the advocacy coalition framework seems apparent in Hank C. Jenkins-Smith, 'Alternative theories of the policy process: reflections on research strategy for the study of nuclear waste policy', *PS: Political Science and Politics* 24, (1991), 157–66.

[62] Anthony E. Brown and Joseph Steward, Jr, 'Competing advocacy coalitions, policy evolution, airline deregulation', in Sabatier and Jenkins-Smith, *Policy Change and Learning*.

[63] See Mark Wickham-Jones 'Monetarism and its critics: the university economists' protest of 1981' *Political Quarterly*, 6 (1992), 171–85.

[64] Richard P. Barke 'Managing technological change in federal communications policy: the role of industry advisory groups', in Sabatier and Jenkins-Smith, *Policy Change and Learning*.

experts who argued that if children were respected they might become more responsible and invested them with the rights of adults. Government policy was led by a professional advocacy coalition put together over at least a twenty-year period.[65] Similarly the 'Health Service and Community Care Act' was driven by a convergence of professionals believing in a new type of care and the Treasury seeing the opportunity to slash social health budgets. Often, the technical solution offered by professionals can in retrospect be seen as disastrous, particularly as it is interpreted by other interested parties.[66]

The advocacy coalition framework has generated enormous interest because it reintroduces the concept of ideas and their origins in the study of policy change. By concentrating on beliefs as a generator of policy change they force attention away from seeing public policy simply as a battle between groups, though knowledge is a forceful source of power, and one way of using knowledge is in open rational debate. The policy advocacy coalition proponents do not demonstrate, however, that public policy is a result of open rational debate, and would not want to try. The approach is perfectly compatible with bargaining models of the policy process. By concentrating upon two primary causes of policy change, the values of coalition members and exogenous shocks to the system, the advocacy coalition framework perhaps misses out on the way in which such ideas are used and misused by other agencies, notably government agencies such as the Treasury to save money. Nevertheless, as the leading exponent of the advocacy framework coalition has maintained, together with institutional rational choice the framework may prove one of the most useful theories of the policy process.[67] Institutional rational choice links together properties of individuals within a decision-making process and properties of the structure under which decision-making takes place.[68] I have argued that the policy network approach is driven by properties of the actors, but the sociological network approach concentrates attention upon network characteristics.

4. The Sociological Network Approach

The descriptive approach uses 'network' as a metaphor. There is nothing methodologically wrong with this, until the metaphors are overblown into classifications posing as explanatory models. The sociological tradition does employ explanatory network models and has been used by numerous European and North American political scientists. In this section I will explain what they are, how they may be used in conjunction with a bargaining model of power; and suggest why this approach is limited. Formalism in political science is to be encouraged, but we should not have inflated expectations of how much it will teach us. In the end the descriptive approach, bounded by a formalized theory, will prove most fruitful.

[65] Nigel Parton, *Governing the Family: Childcare, Child Protection and the State* (London, Macmillan, 1991) esp. ch. 6; c.f. Nigel Parton *The Politics of Child Abuse* (London, Macmillan, 1985).
[66] Patrick Dunleavy, *The Politics of Mass Housing in Britain* (Oxford, Clarendon, 1981); and Patrick Dunleavy, 'Professions and policy change: notes towards a model of ideological corporatism', *Public Administration Bulletin*, 36 (1981), 3–16.
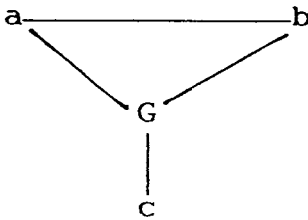[67] Paul A. Sabatier, 'Toward better theories of the policy process', *PS: Political Science and Politics*, 24 (1991), 147–56.
[68] See Elinor Ostrom and Larry Kiser, 'The three worlds of action', in Elinor Ostrom (ed.), *Strategies of Political Inquiry* (Beverly Hills, Sage, 1982).
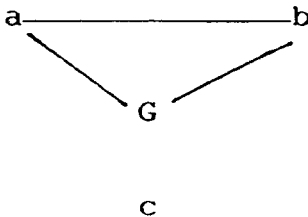
(i)
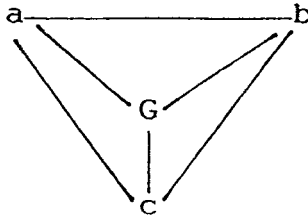
(ii)

(iii)

Figure 1.

The Logic of Network Analysis

Consider Figure 1. In 1(i) we have four dots on a page, each joined to the others by six lines forming the complete set of possible single-joinings. In 1(ii) and (iii) we have the dots joined in subsets of ways in 1(i). All these figures can be called networks. The first can be seen as the logically complete set of single-line interactions between the four dots. The second two are subsets of the first. If the lines represent contacts at the political level then we can see exclusion in (ii) as one dot has no line to others. In (iii) we can see one dot is only linked to G and not the other dots. This might represent a group outside the cosy 'policy community' represented by {a, b, G}. How influential c is cannot be determined by the diagram; that requires empirical research. Now, note, the differences between 1(i), (ii) and (iii) are contained in the fact that
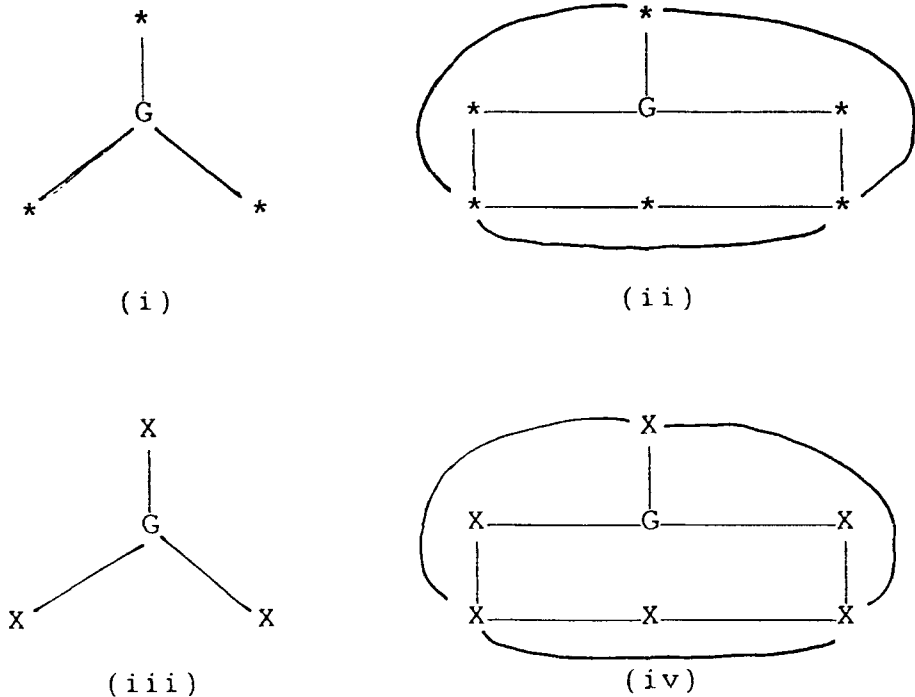
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Figure 2.

they have different lines. The dots and their labelling are exactly the same. If the dots stand for actors (whether people, organizations, classes, or groups in the Bentley/Truman sense) they are invariate across the networks. What makes the networks different are the lines which represent the relationships between the dots. Networks are distinguished one from another by the relations between the actors. In other words, the networks denote different structures. Network analysis is, necessarily, structural.[69] These linkages or different structural features of different networks can be examined by a number of mathematical techniques. Relational data on organizations drawn as a network can be represented in data matrices which can be transformed in various ways to reveal underlying structures.[70] In the sorts of networks we are considering there is likely to be a focal point – a government agency – or rather a set of focal points. The social network literature has developed different measures of centrality to map important individuals within certain social networks.[71] Modifications of such measures, taking into account the greater exchange power of government agencies, could be developed to try to measure the

[69] David Knoke, *Political Networks: the Structural Perspective* (Cambridge, Cambridge University Press, 1990).

[70] David Knoke and James H. Kuklinski, *Network Analysis* (Beverly Hills, Sage, 1982).

[71] L. C. Freeman, 'Centrality in social networks: I – conceptual clarification', *Social Networks*, 1 (1979); P. Bonacich, 'Technique for analysing overlapping memberships', in H. Costner (ed.), *Sociological Methodology, 1973* (San Francisco, Jossey Bass, 1972); P. Bonacich, 'Power and centrality: a family of measures', *American Sociological Review*, 52 (1987).

TABLE 2. Network Characteristics

Characteristics of Members (Dots)	Characteristics of Relations (Lines)
1. Knowledge/information	1. Centrality
2. Legitimacy	2. Number of connections
3. Ability to conditionally change others incentive structures	3. Inclusiveness
	4. Rules of Interaction
4. Ability to unconditionally change others incentive structures	5. Embeddedness
5. Reputation	

closeness of community in certain networks. Graph theory has developed to try to measure the density (inclusiveness and number of connections between actors) of different networks.[72] These measures may all stand as independent variables, for they are measures of characteristics of the *lines* between the dots and are not characteristics of the dots themselves. They are thus features of the network and not of its members. Figure 2 for example specifies two types of network with the members with the same individual characteristics, and the same two types of network with members with different characteristics. If the dots are, say, professional actors linked to a government agency G, the policy community may vary in the type of policy outputs given the different type of network relations in network 2(i) and 2(ii). In 2(iii) and 2(iv) we have the same two types of network as defined by the lines, but here the crosses stand for, say, producer groups with different sets of resources to the professional actors. Hence, these two networks, whilst sharing network characteristics with the professional networks, may have a different type of policy process. We can see here that we may generalize across network type, 2(i) and 2(iii) sharing network features, and 2(ii) and 2(iv) sharing network features, and across network member type, 2(i) and 2(ii) sharing membership features, and 2(iii) and 2(iv) sharing membership features. Table 2 specifies the characteristics that may be of most interest to the network members and the characteristics of the network. The characterization of the relationship into properties of members and properties of the network should not be overdrawn. The power of members is dependent upon the powers of other members given the relationship between them. Similarly the type of relationship members have will be dependent upon their resources. Nevertheless this *analytic* division into members' characteristics and network characteristics can enable us to keep in clearer view the relationship of variables in any given explanation and avoid the confusion of dependent and independent variables.[73]

Sociological network analysis has been used in four major ways.[74] First, variation in the structural ties between network members has been measured as a function of the individual properties of members and the wider society.[75]

[72] N. Christophides, *Graph Theory: an Algorithmic Approach* (New York, Academic, 1975); P. V. Marsden and N. Lin (eds), *Social Structure and Network Analysis* (Beverly Hills, Sage, 1982).

[73] See my critique of Smith, *Pressure, Power and Policy* in Dowding 'Policy networks'.

[74] Philippa Pattison, *Algebraic Models for Social Networks* (Cambridge, Cambridge University Press, 1993).

[75] P. M. Blau, *Inequality and Heterogeneity: a Primitive Theory of Social Structure* (New York, Free, 1977); C. Fischer, *To Dwell Among Friends: Personal Networks in Town and City* (Chicago, Chicago University Press, 1982); C. Fischer, R. M. Jackson, C. A. Steuve and L. McAllister Jones, *Networks and Places: Social Relations in the Urban Setting* (New York, Free, 1977); B. Wellmen, 'The community question: the intimate networks of East Yorkers', *American Journal of Sociology*, 84 (1979), 1201–31.

Secondly, sociologists have studied differences in individual behaviour or psychological health as a function of network characteristics.[76] Thirdly, the behaviour of a group is analysed as a function of the network in which the group operates.[77] Finally, studies have suggested that network characteristics may overcome other features of a group, such as overcoming the 'law of large numbers' under certain forms of network and that certain types of network allow for the easier transmission of information.[78]

Some of the theoretical advances in network theory are of a great importance and are intimately linked with bargaining models of power. Granovetter's early argument that the embeddedness of transactions in recurrent relations and networks increase the use of informal contracts,[79] has been extended to prove that embeddedness allows the development of trust and reciprocity in multi-period games.[80] The density of a network therefore affects the degree and speed at which cooperation may develop. This may help to explain the role of community in cooperative relations and the fact of density rather than small-size *per se* may be the important variable.[81] These formal developments in sociological network and game theory generate a set of research questions for political scientists investigating policy networks. How far the sociological approaches to network mapping can be used by political scientists or how far the formal results can be directly translated into quantitative empirical studies is more open to question. The limitations of the sociological approach to policy networks are best illustrated with reference to one or two of the better examples of its application in political settings.

Laumann and Pappi applied network analysis to élite structures to map a power élite using more advanced techniques than Hunter's, though the

[76] R. C. Kessler, R. H. Price and C. B. Wortmann, 'Social factors in psychopathology', *Annual Review of Psychology*, 36 (1985), 531–72; S. Cohen and S. L. Syme (eds), *Social Support and Health* (New York, Academic, 1985); M. Granovetter, 'Economic action and social structure: the problem of embeddedness', *American Journal of Sociology*, 91 (1985), 481–510; W. E. Baker, 'The social structure of a national securities market', *American Journal of Sociology*, 89 (1983), 775–811; K. E. Campbell, P. V. Marsden and J. S. Hurlbert, 'Social resources and socioeconomic status', *Social Networks*, 8 (1986), 97–117.

[77] E. O. Laumann and F. U. Pappi, *Networks of Collective Action: a Perspective on Community Influence Systems* (New York, Academic, 1976).

[78] M. Granovetter, *Getting a Job: a Study of Contacts and Careers* (Cambridge MA, Harvard University Press, 1974); N. Friedkin, 'A test of the structural features of Granovetter's strength of weak ties', *Social Networks*, 2 (1980), 411–20; N. Lin and M. Dumin, 'Access to occupations through social ties', *Social Networks*, 8 (1986), 365–85; N. Lin, W. M. Ensel and J. C. Vaughn, 'Social resources and strength of ties: structural factors in occupational status attainment', *American Sociological Review*, 46 (1981), 393–76.

[79] M. Granovetter, 'Economic action and social structure'.

[80] W. Raub and J. Weesie, 'Reputation and efficiency in social interactions: an example of network effects', *American Journal of Sociology*, 96, (1990), 626–54; J. Weesie and W. Raub, 'The management of trust relations', paper presented at World Congress of Sociology, Bielefeld, July (1994).

[81] Size is important to the community arguments of Michael Taylor, *Community, Anarchy and Liberty* (Cambridge, Cambridge University Press, 1982) and *The Possibility of Cooperation* (Cambridge, Cambridge University Press, 1987). Of course, empirically small size and density may well be correlated.

		Event B	
		Participate	Not participate
Event A	Participate	*a*	*b*
	Not participate	*c*	*d*

Figure 3. Event linkages on basis of participation patterns

relationship between the élite maps and policy outcomes remains unclear.[82] Later work has attempted to relate policy influences to these maps. Laumann *et al.* have attempted to map, in two-dimensions, the organizations involved in various policy domains.[83] The maps are constructed by identifying organizations with interests in a particular policy area and assessing the level of their activity. By using a method of identifying significant decisions in a policy area, they have attempted to see what linkages between organizations exist across sets of different issues within the same policy area.[84] Their method assumes an organization could (a) participate in the first event (*i*) and continue to participate in the second (*j*), (b) participate in the first but not the second, (c) not participate in the first but participate in the second, (d) not participate in either. This can be represented in a matrix as in Figure 3. The relationship between events *i* and *j* is then given by Yule's $Y = (a.d/b.c) - 1/(a.d/b.c) + 1$. Where Y is positive the organizations tend to participate in the same events; where Y is negative organizations non-activity in one event is non-randomly associated with activity in the other. This can demonstrate the degree to which interests overlap in some policy domains. Following up this work, Laumann *et al.* then attribute a pro or con attitude towards each event on the basis of interview evidence. Comparing attitudes to participation Laumann *et al.* conclude that technocratic and strategic rather than ideological considerations drive participation. They then map their organizations by blockmodelling on two-dimensional space according to organizations taking up opposing or supporting positions. A description drawn from one of their maps shows its usefulness and its limitations:

> we find the American Agricultural Movement at the extreme lower lefthand side of the space diametrically opposite the National Cattlemen's Association at the upper righthand corner ... and the Environmental Defense Funds in the lower righthand corner, thus forming an equilateral triangle

[82] F. Hunter, *Community Power Structure* (Chapel Hill, University of North Carolina Press, 1953); Laumann and Pappi, *Networks of Collective Action.*

[83] Edward O. Laumann and John P. Heinz with Robert Nelson and Robert Salisbury, 'Organizations in political action: representing interests in national policy-making' in Marin and Mayntz, *Policy Networks*; John P. Heinz, Edward O. Laumann, Robert L. Nelson and Robert H. Salisbury, *The Hollow Core: Private Interests in National Policy Making* (Cambridge MA, Harvard University Press, 1993).

[84] Edward O. Laumann and David Knoke, *The Organizational State: Social Choice in National Policy Domains* (Madison, University of Wisconsin Press, 1987), ch. 1.

of opposing interests ... The Farm Bureau, like its more politically radical
neighbor in the space, the American Agricultural Movement, represents
grain producers. The Cattlemen's interests are generally aligned with those
groups that process and consume grain, including the Milk Producers,
General Mills, the Grocery Manufacturers Association, and so forth. The
Environmental Defense Fund is the most active of the labor, environmen-
tal, and consumer groups that challenge, among other things, the farmers'
use of pesticides and water.[85]

In other words, the years of hard data collection and formal analysis has
yielded results which look plausible given what we already know about the
groups concerned. This is too harsh: the paradox of formal analysis is that it
must yield results which by and large fit with what we know by descriptive
methods – otherwise we know something has gone wrong with our formal
analysis. What we require to justify formalism is some surprising results, or
paradoxical conclusions, which then justify closer qualitative analysis. Lau-
mann *et al.* can claim some success in this regard. Their most interesting finding
is that organizational coalition-building is highly unstable and in the Agricul-
ture, Health and Energy domains there is no single partition which might
coincide with a left-right ideological cleavage. Only in the Labor domain is
there such a cleavage. They suggest that descriptive approaches probably
exaggerate the degree of stability of participation, consensus and cleavage in
policy-making. In fact we could predict this conclusion by applying some of the
results of formal theorizing about government coalition building.[86] We know
that as the number of ideological cleavages increases so does the expected
instability of any coalition. In this case, though there is no need for formal
coalitions, we should still expect the instability of informal alliances to increase
with the number of cleavages.

The fruition of this approach is seen in *The Hollow Core*.[87] This book utilizes
the formal network approach within a more discursive discussion of the policy
process. Building on the techniques described above and using a series of
smallest-space analyses the authors chart who bargains with whom in four
policy domains. They are able to diagram the relationship of organizations
within communication networks and the structure of conflict and cooperation
comparing across the four policy domains. Whilst variations occur, they
discover in all four domains that the networks vary in three-dimensional space
with a hollow core – that is there are no policy influentials mediating or
dominating at the centre. This a powerful use of formal network analysis, but
even here caution must be applied when using it as an empirical analysis of
various competing 'theories' of the state. By creating three-dimensional maps
of communication networks through groups targeting different sets of govern-
ment officials (within executive agencies and congressional committees) and
through conflict and cooperation, the core may in fact be filled by the
government agents as the termini of the network (that is, at which the
communication is directed). As Heinz *et al.* acknowledge we cannot say
whether these government agents act as interested participants, disinterested

[85] Laumann *et al.*, 'Organizations in political action', pp. 87–8.
[86] See Michael Laver and Norman Schofield, *Multiparty Government: the Politics of Coalition in Europe* (Oxford, Oxford University Press, 1990) for a general review of the literature.
[87] Heinz *et al. Hollow Core*.

intermediaries or are 'captured' by certain groups.[88] Again therefore, the network analysis is more of a map of the policy process, than a fully fledged explanation of it.

Volker Schneider similarly uses three-dimensional mapping of organizations in two German policy domains – chemicals and telecommunications.[89] Demonstrating different structures in each he suggests that they seem to create a different mechanism of policy-making. In the first a corporatist picture of government emerges with the monopolistic Assocation of Chemical Producers and to a lesser degree a monopolistic trade union. In telecommunications a more pluralistic network is mapped. But why the maps are different are not explained by the network analysis itself. Rather we are left with the suggestion that the greater distributional conflict in telecommunications and the fact it is an emerging sector compared to the chemicals sector explains the different character of the networks.

Pappi and Knoke,[90] using James Coleman's exchange model of power,[91] also demonstrate the limitations of formal network approaches. They attempt to compare the relative power of functionally similar organizations within the Labour policy networks in Germany and the US, and the relative power of organizations within policy communities within the two networks. Again, despite an impressive attempt to quantitatively compare relative powers cross-nationally, the results are ultimately disappointing if not misleading. Coleman's is a constant-sum measure of power. But one of the most important, though least trumpeted, results from the policy network approach is how fragmented and separate groups (including government agencies) are able to act concertedly to wield more power than the sum of each member. Similarly, breaking up governance structures into differentiated quasi-governmental organizations within newly created policy communities can cause overall power loss.[92] Pappi and Knoke's numbers are not merely difficult to interpret, they are probably meaningless in terms of the concept of group and state power in mainstream discussions of state 'theory'.

A final example also reveals the limitations of formal network analysis. Using diagraph techniques Phillips maps the relationship between 33 national Canadian women's organizations.[93] She demonstrates that these diverse groups form a loosely coupled network bound by a collective identity of liberal feminism. She then tries to measure their influence in terms of their financial

[88] Heinz *et al. Hollow Core*, pp. 377–8.
[89] V. Schneider, 'Control as a generalized exchange medium within the policy process? a theoretical interpretation of a policy analysis on chemicals control' in Bernd Marin (ed.), *Governance and Generalized Exchange: Self-Organizing Networks in Action* (Frankfurt, Campus, 1990); V. Schneider and R. Werle, 'Policy networks in the German telecommunications domain' in Marin and Mayntz, *Policy Networks*; V. Schneider, 'The structure of policy networks: a comparison of the "chemicals control" and "telecommunications" policy domains in Germany', *European Journal of Political Research*, 21 (1992), 109–29.
[90] F. U. Pappi and D. Knoke, 'Political exchange in the German and American labour policy domains' in Marin and Mayntz, *Policy Networks*.
[91] James S. Coleman, *Foundations of Social Theory* (Cambridge MA, Belknapp, 1990).
[92] Keith Dowding, Patrick Dunleavy, Desmond King and Helen Margetts, 'Rational choice and community power structures', *Political Studies* forthcoming.
[93] Susan D. Phillips 'Meaning and structure in social movements: mapping the network of national Canadian women's organizations', *Canadian Journal of Political Science*, 24 (1991), 755–81.

resources and network position by measuring their perceived impact as rated by a selected subset of government officials. In a multiple regression analysis size of budget was found to be a poor predictor of perceived influence whilst network position was found to be a strong influence. However, since network position is given in terms of centrality, and relative centrality is defined in terms of the number of ties involving a group divided by the total number of ties minus one, this is hardly surprising. Organizations which act as a conduit to government officials for other organizations (and therefore rightly identified by her method as more central) are almost bound to be *perceived* by government officials as being more influential. Government officials are hardly likely to identify as influential organizations with which they have few if any dealings, even if these peripheral groups *determine* the policies of the more centralized ones. The method of analysis here determined the results.

I do not wish to appear too sceptical about the usefulness of formal network analysis. If the properties of networks are to be clearly identified as causally efficacious then only this type of technique will demonstrate this. Any demonstration, no matter how weak, will then allow us to draw some inferences about broader structural effects even when these are not quantifiable. Furthermore, it is pernicious to damn a research programme too early in its life; only through attempting quantification with new techniques can we learn the limitations and try to overcome them in new and dynamic ways. However, there is a tendency amongst formal theorists to promise more than they can deliver.

Conclusions

Marin and Mayntz suggest that formal and informal network analysis need to be combined.[94] I have argued that only formal network analysis actually provides explanation in terms of the *properties of networks*. Informal network analysis would gain more by concentrating on the features of actors which bargaining theory teaches us are important. Thus we will learn more about the similarities and variances between policy networks. The resources actors use are in part determined and constrained by structured networks and the properties formal network analysis has elucidated. Quantification in the manner of the sociological network tradition may enable us to see some of the general features which attach to network structures. However, network analysis has proved inadequate in providing fully determined causal analysis of particular networks in structural terms. Some network theorists simply believe this to be due to the state of the research programme and the quality of the data recorded thus far. I have tried to argue that this is not so. To promise that network analysis will eventually go beyond demonstrating general features of networks will ultimately lead to disappointment. The quality of the data is necessarily too poor for determinate predictions because collecting such high quality data requires us to know the answers to the questions we are posing. Such answers are themselves open to competing interpretations even for those involved in the events. This is not an argument against formalism, but it is an argument against too high expectations from it. Science may end in algebra, but the nature of the data will ensure that social science will not end argument.

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[94] Bernd Marin and Reynate Mayntz, 'Introduction: studying policy networks', in Marin and Mayntz, *Policy Networks*.