

Networks and Regional Governance: the Integration of Partnership bodies as an Indicator of Regional Cohesion¹

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Abstract

The paper examines relationship between the structure of regional elite networks and the extent of integration in the regions their members occupy. Theory suggests that regional networks, supported by cognate social and economic networks, can lead to the formation of regional political institutions. Before 2004, English regions have been hypothesized to exhibit a slow but highly varied progression from social identity to economic cross-working, informal elite interactions, and finally to full regional government; a pattern of development that influenced the English government's strategy of encouraging differential paths to regional government. To explore these ideas, the paper uses formal measures of network from cross membership of partnership bodies to measure network characteristics in the North East, the North West, Yorkshire and the Humber and the South East regions. It concludes that the three regions that were involved in the failed referendums on elected regional government in 2004 are similar in network terms and that this data do not support the government's decision to set the North East apart in this process. However, the underlying hypothesis about the difference in elite networks is supported as the South East is very different to the other three regions.

Key words: regions, networks, elites, governance, England

There is a substantial body of research that supports a theoretical connection between the building of regional government with the operation of networks across key sub-national political and economic institutions, both from the public and private sectors (e.g. Cooke and Morgan 1993, Morgan 1997). The core assertion is that, in the long run, strong networks are linked to effective regional government, with a possible causal relation from the former to the latter. In situations before regional political structures have become embedded in legislation and constitutions, scholars and activists see elite networks as the precursor to more formal institutions or an indication of how informal governance can work within the existing networks of government. These networks are sustained by supportive and complementary social and economic interactions and create a causal path from supportive regional cultures, social networks, economic networks, to political networks and governance, and finally to regional political institutions.

The analytical potential of such a link between networks and regional government draws on the natural variation between sub-national systems in the degree to which their areas have different underlying foundations for governance and different histories of collective action. In particular, they differ in political and social cohesion and identity in ways that may sustain the strength of political networks. Just as urban areas vary to the extent to which citizens identify with the urban space, with elites reflecting that spatial dimension in their interactions, so too the spaces beneath the nation state – regions – vary too. What the variation creates is differential pathways to (or away from) regional governance, with some areas being dispersed and modernized, and part of large sprawling mega-regions (John et al 2005), with less potential for effective regional governance and government.

In contrast, other areas may be less modernised, with greater residual levels of social and spatial identification, and/or may be distinct regional areas with defined economic interests, say either deprived regions or compact prosperous ones. It is these more socially and economically defined regions that could be thought to be where regional governance operates more cohesively, and where there are stronger links in the regional networks. Of course, there need be no natural spillover between society, economy and politics this fashion: theory and the extant literature hints at its plausibility, but the empirical evidence may contradict such an assertion.

This paper seeks to test the network-integration hypothesis by comparing network data from four English regions which engaged with New Labour's regional project in markedly different ways. We have information about the citizen support or otherwise for regional ideas and more informal evidence about regional cross-working and political histories. To this base we are able to match measures of elite network activity in four English regions, the North East, North West and Yorkshire and the Humber, which were at the centre of government plans to introduce elected regional government in 2004, and the South East, which had long been regarded both as a 'laggard region' in New Labour's programme of constitutional reform in England and as an area with relatively weak regional identity (Tickell et al 2002). The comparison of background regional indicators with formal network measures provides the basis of the evidence in this paper. Then the paper seeks to compare both sets of results with the dramatic sets of events that curtailed the development of elected regional assemblies in England in late 2004, when a crisis of government confidence in public support led planned referendums in the North West and

Yorkshire and the Humber to be cancelled. In many respects this decision was vindicated by a crashing referendum defeat the North East in November 2004, which had long claimed to have the most networked elite and regional culture and awareness among the English regions, and was thought to be the most likely region to support a regional assembly.

Literature Review

The study of regions in economic geography and political science has advanced the idea the some regions have dynamic and well-functioning networks, which operate to the benefit of regional economies. For example, shared knowledge and production capabilities in small and medium sized enterprises and regional clusters of innovation and enterprise that sustain above average rates of economic growth have both been associated with strong networks (Piore and Sabel 1984, Cooke 1997, Morgan 1997, Scott 2001). While these arguments are primarily economic in character, there is a political dimension to them too. Well networked regions often have political processes that reflect the natural synergy, and act as building blocks toward more autonomous political entities that are adapted to manage these growth-enhancing economic networks. Hence there are the autonomous governments of North Italy linked to strong social and economic networks, and also accounts of governance across regions which span national boundaries. There is a similar line of argument around theories of social capital, which links strong networks between citizens and groups with effective regional or state governments.

Putnam suggests that autonomous government in northern Italy has been sustained by productive group memberships and networks between the citizens in contrast to the sclerotic and centralised South, arguments that have been extended and elaborated in his work on US states (Putnam 1993, 2000).

There has been a retreat from claims of the power of networks in recent commentary (Koch and Fuchs 2000), where evidence sometimes suggests that the rise and decline of economic regions may have little to do with the network structure. Elsewhere, criticisms of the policy network literature also leads to a more cautious approach (Dowding 1995). The main problem is the attribution of a causal link between the characteristics of networks and any outcomes that may be thought to arise from them. Too often, the outcomes are assumed rather than proved. A major counter possibility is that networks simply reflect whatever structures, power relations and values are in place in any case, without networks affecting outcomes very much. This argument does not necessarily affect the basic argument being put forward, because elite networks should reflect the character of the regions they inhabit. However, the argument because more interesting and relevant if there is an added effect of the networks on governance outcomes.

The network literature has paid less attention to the character of the networks between regional elites themselves, though these are an important part of the story. Most studies tend to assume that networks are important, such as pulling together the diverse nature of contemporary fragmented institutions. For example, the regional corporatist literature

that assumes that links the rise of partnerships with a regional dimension to politics and policy (Robinson and Shaw 2001).

One neglected area of investigation is formal measures of networks as an indication of regional cross-working. Formal network analysis has its origins in both mathematics and sociology (Wasserman and Faust 1994, Scott 2000) in the examination of the properties of the links between nodes in a system, which has been applied to social relationships. The application to political relationships came later, and has been used to look at transactions in policy networks (Knoke 1990, Knoke and Lauamnn 1987, Knoke et al 1996, König and Bräuninger 1998), closely linked to the measurement of power. The application of formal networks to the sub-national level is strong in urban sociology (Lauman and Pappi 1976, Gould 1989), but its application has been rare in regional networks. We argue that the precision of network analysis offers potential to explore the structure on networks and to compare them within nation states. Naturally, there is much that networks do not detect in terms of thick relationships, but it is claimed that formal measures may illuminate particular aspects of networks which illustrate the whole and provide for valid comparisons.

One exception is the collection of data on the region of Hanover (Furst et al 2001), where levels of social capital, measures of centrality and density were calculated to illustrate the varied nature of one region and then its access to external resources. Another interesting application is in planning in California (McCoy and Lubell (2005), a study that sampled 519 key players in the planning field from a content analysis of individuals located on

key institutional websites. They used the Google search engine to locate these individuals on other websites, coding the links to and from each institution. They then compared the density of the counties within the sample area, the networked character of individuals through the centrality scores. This method of sampling overcomes one of the crucial problems of formal network measurement: the inaccuracy of network contacts based on interview or questionnaire data, which has a low relation to observed networks, with experimental studies shows that respondents exaggerate their contacts on average by a factor of two (Kilworth and Barnard 1978, Barnard et al 1979/80).

The policy context

The policy focus of this paper is on the contribution of elite networks to the evolution of regional institutions in England. Regions have developed in an incremental way, with functions being devolved down from central departments and up from local government in an ad-hoc manner over many years (Hogwood and Keating 1982, Garside and Hebbert 1989). At the earliest, and most trivial, stage of the process, government administrative functions were geographically dispersed. With few notable exceptions, such dispersals involved routine tasks, while senior civil servants remained proximate to the political centre. The relocation of administration activities in the Driver and Vehicle Licensing Agency from London to Swansea in the early 1970s, or more recently the relocation of social security administration to Leeds in the 1980s, brought welcome employment to depressed economies, but did little to alter the geography of real power in England

(Marshall et al., 1997). All too frequently the dispersed civil service functions resembled manufacturing branch plants, with limited management autonomy and a relatively low-skilled labour force. More significant developments in English regional government began under John Major's Conservative administration. During the 1980s, while the national territories each had economic development bodies that invested significantly at promoting the country as a location for mobile investment, the peripheral English regions each had a poorly funded inward investment promotion body (Dicken and Tickell 1992). However, the deepening of European integration and, particularly, the emergence of discourses around a 'Europe of the regions' as a counterweight to the economically centralising reality of a single European economic space prompted the start of a very real regionalisation of English political and economic life (Hebbert and Machin 1984, Harvie 1994, Tomaney 1996, Halkier et al. 1998, Keating 1998). Thus, North West England began to organise seriously as a region in response to explicit pressure from the European Union and implicit recognition that winning EU structural funds required a regionally coherent message, rather than the series of competitive and fragmentary voices that had characterized the region hitherto (Tickell, Peck and Dicken 1995, John et al 2002). By the mid-1990s it was clear that some form of regional tier of government had become a necessary part of doing business with the European Union (Hall and van der Wee 1998).

Legislation strengthened the regional tier of government and sought to make it more accountable to the public. The white paper '*Your Region, Your Choice*' by the Office of the Deputy Prime Minister – or ODPM – in May 2002 outlined the government's proposals (ODPM 2002), including the creation of a new set elected Regional

Assemblies, local government reform and the empowerment of regional institutions in a range of specific new areas. These proposals were further developed by the Regional Assemblies (Preparations) Act 2003, which prepared the way for referenda on elected Regional Assemblies in the North East, North West and Yorkshire and the Humber regions, following an ODPM soundings exercise that identified a degree of public and institutional support for elected government in each region. Implicit in the decision to hold referendums in these three regions was the conclusion that they had moved further towards developing a coherent regional political identity than other parts of England. In particular, the campaign in support of an elected assembly for the North East region could point to a longstanding coalition of political, ecclesiastical, trade union, business and civic individuals and organizations from across the region. In this respect, the referendum regions were seen to be markedly different from other provincial regions of England, where such networks of support were at best very limited.

Research design

We studied four English regions to understand the structure of the inter-organisational networks in the period leading up to the referendum period in late 2004. We selected the three referendum regions that had been identified as most likely to support elected regional government, although in the event a referendum was only held in the North East. For comparison, we also analysed the South East a large mega-region where public support for an elected assembly was comparatively weak and where powerful sub-

regional and county political elites dominated over weak regional institutions (John et al 2004). This selection creates the expectation that regional elite interaction will be more densely characterised in the North East, followed by the North West, Yorkshire and Humberside, and finally by the South East region

The research methodology was to collecting social network data from the boards and membership lists of regional and sub-regional institutions. Such a methodology has also been used to understand the centrality of the banking to economic networks by identifying common membership of company boards of bank and enterprises partly funded by them. (Bearden et al 1975, Fennema, Meindert and Schijf. 1978/79, Carroll et al 1982, Koenig and Gogel 1981, Mizruchi and Schwartz 1987, Clawson and Neustadtl 1989, Mizruchi 1996). We collected information from all the economic development partnerships in the region by starting with the three regional institutions and by identifying their main sub-regional partners with which they work at the local level. For example, Regional Development Agencies work through regeneration partnerships and economic partnerships and Government Offices through Local Learning and Skills Councils. We then moved on to identify the composition of their boards and the organisations represented on them. Apparently non-regional organisations are included because they may have representatives on various partnership boards (e.g. Thames Gateway), although they were not sampled themselves. The result is a small number of sampled organisations and a much larger number of derivative organisations with whom they have networked relationships. We coded the presence of a board member on the board of another organization as a link, coding at a number

higher than one in the case of more than one link, making the matrix a valued graph. In the North-West this procedure yielded 206 actors, 190 in the North East, and 282 in the South-East. This contrast already shows the difference between the regions, partly based on size, but that the South-East is more fragmented into a greater number of well-defined sub-regions, whereas the North West and the North East have a similar number of organizations. The resulting data matrices, which are symmetric because the entries indicate links to and from each actor, were analyzed by UCINET software (Borgatti et al 1999).

Results

A first take on the networks is to examine their density, which is the number of ties over the total possible number of possible ties. This is quite low in the case of North East at .04, which reflects the large number of organizations included in the base number. There is a similar number in the North West of .03, with Yorkshire and Humberside coming out at .04. As predicted the South East has a much lower density of .01. However, given the nature of the sampling, density may not be the best measure to pick up on the character of the networks. Here the nature of the central points may be of more use for this kind of analysis. One of the classic measures of networks is centrality that measures each node's connections to all the others, in the most simplest case of Freeman degree centrality measuring the number of contacts with each actor (Bonacich 1987). This measure captures those organizations that are at the centre of networks, the middle of the star in a

simple network, and the place through which contacts flow through. Other measures of networks, such as betweenness and Bonacich power, are in practice highly correlated with the Freeman measure. This aspect of network structure is important to understand the power structure of the regions. Table 1 presents the top twenty Freeman network scores for each region in order, including those adjusted for network size, the normalized degree, from the highest first. Where there were a number of equal scores that take the total to over twenty, the table records the total under twenty. Space does not permit the representation of all the actors, and many of which have a very low centrality scores indicating their lack of importance in the formal network and also justifying the concentration on the top scores.

As is indicated by the literature (McCoy and Lubell 2005: 3), the balance of central points take a particular shape, a ‘power curve’, with a few points at the central points with many more at much lower levels. To examine the shape of the power curve. Figures 1 plots the normalised centrality scores against the rank scores. In the regions where do not report the organisations that led to the total being over twenty, we input the scores into the empty cells to help with the comparison. As with the other data, we find that the three northern regions are very similar in having a large leap between the early ranked core actors and the others, whereas the South East has a much more gradual decline, which reflects the existence of multiple centres of power and lower scores for the most central organisations.

Some of the other measures show some differences between the three 'referendum regions': the North East has a centralization measure of 63.17%, whereas the North West is 55.5 per cent and Yorkshire and Humberside 50 per cent. But again, the South East is a massive outlier with a network centralization of 25.5 per cent. Another way of using the centrality scores is to compare equivalent central scores for the similar actors in each region. Thus Government offices score 31.2 (North East), 28.3 (North West), 1.6 (Yorkshire and Humberside), and 1.2 (South East), which shows similarities for the North East and North West. The regional development agencies also have varying normalized centrality scores: 66.7 (North East), 43.4 (North West), 55.1 (Yorkshire and Humberside) and 10.77 (South East), which shows the South East to be the outlier. The CBI scores differ too: respectively 15.9, 4.5, 5.4 and 2.1, which shows the North East to be different from the others. The Assembly scores are: 50.8, 58.0, 10.9, and 26.46, which show the North East to be different. Thus the regions vary in different ways, with only the South East being very different to the others, which confirms the idea that the three Northern regions do not differ enough in their regional elite networks to justify setting the North East apart, though there are some measures that do so.

How does this information compare with other information we have about the integration of English regions? With such a small number of cases, we cannot show or report any associations with other measures, merely observe whether order and magnitude are similar. The most common measure of regional coherence or integration is the extent to which the public supports regional government, which may be thought to be a preexisting culture in which regional elites operate and gain legitimacy for acting in a regional sense,

or whether a more regionally integrated elite can foster a more elite culture. There have been a number of polls about regional government (see Devolution Programme 2003), but the best is the County Councils Network carried out in 2003, which had about 500 respondents in each region, which reported that 40 per cent in the South East would vote in favour of an elected region, compared to 51 per cent in the North East, 49 per cent in Yorkshire and Humberside and 50 per cent in the North West. This again points to the similarity between the three northern regions in their networks is again replicated in public opinion support. This points to the three northern regions being similar in many respects in terms of their elites and integration, which made the initial decision to locate a referendum in the three regions probably correct in terms of readiness for the regional project, but less rational to cancel two of them and only proceed with the North East because it was more of a hope for winning the regional referendum. Such a hope was foolhardy as the 78:22 vote against demonstrated.

A similar approach, but one closer to networks, can be investigated by the getting measures of the extent to which English regions have high or low levels of social capital. This is important because in Putnam's model (1993) a high level of social capital linked to the performance of the regions, and that both the networks and associations and the community level and elite networks work neatly together to produce effective and legitimate government. In Casey's interpretation of the argument, 'differences in the levels of social capital across Britain's regions ... implies that devolved government is likely to be more effective and efficient in some places than others' (2002: 55). Casey finds in an aggregated measure of social capital that the South East has the highest level

of social capital (94/100) whereas the North East has the lowest (73/100), with Yorkshire and Humberside (85) and the North West (87) in between, with the latter nearer the South East level than the North East. This measure is made up of survey components of voting, participation, political interest, efficacy, civic cooperation, and membership of groups. Obviously, it is important to control for wealth effect here, which would be hard to do with number as small as the English regions. But it may be possible to conclude there is not an association between the extent of social capital and elite networks, and a mismatch between the underlying capability of regions and the elites' conception and practice of regionalization.

Conclusions

It is impossible to make regions from formal institutions alone; the bonds across institutions ought to play part of the story as regional actors work together and devise common solutions and routines of working. From these beginnings, the assumption is that the informal world of governance works better and delivers efficient policy outcomes. As national structures of administration, based on the relationship between central and local government, give way to more complex patterns of sub-national administration, where administrative and elected regions have more power, these pre-existing networks take on some importance as possible precursors to more developed and autonomous regions, and where elites may champion their regional projects. Although

culture and political opportunities play their roles, networks may be the glue that allows one stage of regionalisation to move to the next.

There are naturally many cautious statements to be made on the hypothesis of network-regionalisation or network-integration, such as the strength and direction of the causal arrow, and that elite networks may leave out the most important, but sometimes neglected participants, the citizens themselves, who have views about the operation of regional institutions, if not fully formed. In some countries, the elite version of regionalization can proceed quite happily, with the French regions, for example, increasing in legitimacy and popular support despite an unpromising beginning. In the case of the English regions there was a massive disjuncture between the elite account of regional operation and the reality of the popular discontent with the idea. With the referendum mandate as the entry level, the popular version of the regional project gained sway, and the ambitions of both national and regional elites lay in ruins after the decisive referendum of November 2004.

This paper has used one measure of networks across regional institutions to examine whether the claims about the difference of the regions in elite discourse and policy is borne out by the evidence. The problems of the validity of many network measures did not suggest an interview based measurement of the network would be the best measure, but we used instead the cross membership of partnership bodies. It captures a powerful element of institutional linkage even if many of the informal measures are not so apparent. Here we find not a great deal of difference between the three initial referendum regions, but with a large difference with the South East region, which has always been

characterized by institutional fragmentation and low support for regional government. Along with similarities of political support, this finding shows the lack of rationality of going ahead with the final referendum. Had elites paid more attention to the similarities across the three regions, the political disaster may have been avoided.

References

- Barnard, H. R., Kilworth, P. and Sailer, L. (1979/80), 'Informant accuracy in social network data IV: a comparison of clique-level structure in behavioral and cognitive network data', *Social Networks*, 2: 191-218.
- Bearden, J., Atwood, W., Freitag, P., Hendricks, C., Mintz, B. and Swartz, M. (1975), 'The nature and extent of bank centrality in corporate networks', a paper presented at the American Sociological Association.
- Bonacich, P. 1987. Power and centrality: A family of measures', *American Journal of Sociology*, 92: 1170-1182.
- Borgatti, S., Everett, M., and Freeman, L. 1999. *Ucinet 5 for Windows: software for social network analysis*. Natick: Analytic Technologies.

- Carroll, W., Fox, J. and Ornstein, M. (1982), 'The network of directorate interlocks among largest Canadian firms', *Canadian Review Sociology and Anthropology*, 19: 44-69.
- Casey, T. (2002), 'Devolution and social capital in the British regions', *Regional and Federal Studies*, 12(3), 55-78.
- Clawson, D. and Neustadtl, A. (1989), 'Interlocks, PACs, and corporate conservatism', *American Journal of Sociology*. 94: 749-73.
- Cooke, P. and Morgan, K. (1993), 'The network paradigm: new departures on corporate and regional development', *Society and Space*, 11: 543-64.
- Devolution Programme (2003), *The English Regions Debate: What do the English want?* ESRC Devolution Briefing No 3.
- Dowding, K. (1995), 'Model or metaphor? A critical review of the policy network approach', *Political Studies*, XLIII: 136-58.
- Fennema, M. and Schijf, H. (1978/79), 'Analysing interlocking directorates: theory and methods'. *Social Networks*, 1: 297-332
- Furst, D., Schubert H., Ranolph, A., Spieckermann, H. (2001), 'Regional actor networks between social capital and regional governance', *Connections*, 24(1): 42-67.
- Gould, R. (1989), 'Power and social structure in community elites', *Social Forces*, 68: 531-552.
- John, P, Tickell, A. and Musson, S. (2005), 'Governing the mega-region: governance and networks across London and the South East of England', *New Political Economy*, 10(1), 93-108

John, P. Musson.S. and Tickell, A. (2002), 'England's problem region: regionalism in the South East', *Regional Studies*, 36(7), 733-741.

Keating M, 1998, *The New Regionalism in Western Europe* (Cheltenham, Edward Elgar)

Kilworth, P. and Barnard, H. R. (1978), 'Informant accuracy in social network data', *Human Organization*, 35: 269-96.

Knoke, D. (1990): *Political Networks*. Cambridge: Cambridge University Press.

Knoke, D. and E. Laumann (1987): *The Organizational State. Social choice in national policy domains*. Wisconsin, USA: The University of Wisconsin Press.

Knoke, D., F. Pappi, U. Broadbent, J. and Tsujinaka, Y. (1996): *Comparing Policy Networks. Labor politics in the U.S., Germany and Japan*. Cambridge: Cambridge University Press.

Koch, A. and Fuchs, G. (2000), 'Economic globalization and regional penetration: The failure of networks in Baden-Württemberg', *European Journal of Political Research* 37 (1), 57-75.

Koenig, T. and Gogel, R. (1981), 'Interlocking directorates as a social network'. *American Journal of Economics and Sociology*, 40, 37-50.

König, T. and Bräuninger, T. (1998), 'The formation of policy networks preferences, institutions and actors' choice of Information and exchange relations', *Journal of Theoretical Politics* 10(4): 445-471.

Laumann, E. and Pappi, F. (1976), *Networks of Collective Action: A Perspective on Community Influence Systems* New York: Academic Press.

- McCoy, M and Lubell, M. (2005), 'Policy networks: collaborative land use planning in California', unpublished paper.
- Marshall J, Hopkins W, Richardson R, 1997, "The civil service and the regions: geographical perspectives on civil service restructuring" *Regional Studies* 31.6 607 - 613
- Mizruchi, M. (1996). 'What do interlocks do? An Analysis, Critique, and assessment of research on interlocking directorates', *Annual Review of Sociology*, 22, 271-298.
- Mizruchi, M and Schwartz, M. (1987) *Intercorporate Relations: The Structural Analysis of business*. Cambridge, England: Cambridge University Press
- Morgan, K. (1997), 'The learning region: institutions, innovation and regional renewal', *Regional Studies*, 31: 491-503.
- Piore, Michael and Charles Sabel. (1984), *The Second Industrial Divide: Possibilities for Prosperity*, New York: Basic Books..
- Putnam, R. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton: Princeton University Press.
- Putnam, R. (2000). *Bowling Alone: the Collapse and Revival of American Community* New York: Simon and Schuster.
- Robinson, F. and Shaw, K. (2001), 'Regeneration partnerships, 'community' and governance in the North East of England', *Northern Economic Review*, 31: 4-19.
- Scott, Alan (ed.). 2001. *Global City Regions*. Oxford: Oxford University Press.
- Scott, J. (2000), *Social Network Analysis: A Handbook*, 2nd edition, (London: Sage).

Tickell A, John P and Musson S, 2002, "Building institutions in a vacuum: regional government and England's South East" *Regional Studies* 36

Tickell A, Peck J, Dicken P, 1995, "The fragmented region: business, the state and economic development in north west England" in M. Rhodes (ed.) *The Regions and the New Europe. Patterns in core and periphery development*, (Manchester, Manchester University Press).

Tomaney J, 1996, "Regional government and economic development: possibilities and limits" *Local Economy* 11.2 27 – 37

Wasserman, S. and Faust, K. (1994). *Social Network Analysis*. Cambridge University Press, New York, 1994.

Tables

Table 1: Top network centrality scores for the selected English regions

A.	<u>North East</u>		
		Degree	NrmDegree
1	One Northeast	126	66.67
2	North East Assembly	96	50.79
3	GONE	59	31.22
4	CBI	30	15.87
5	Newcastle Learning Partnership	24	12.7
6	Northern Business Forum	20	10.58
7	NECC	19	10.05
8	Newcastle College	18	9.52
9	Association of North East Councils	18	9.52
10	Newcastle City Council	17	8.99
11	LSC: Tyne and Wear	14	7.41
12	The Education Committee	13	6.88
13	The Eurocities network	13	6.88
14	The Social Welfare Committee	13	6.88
15	The North West SRB Partnership Board	13	6.88
16	Teesside University	12	6.35
17	Tyne and Wear Co-ordinating Committee	13	6.88
18	Tyne and Wear Economic Development Company	13	6.88
19	The NorThern Council of Education Committee	13	6.88
20	The Tyne and Wear Learning Partnership	13	6.88
	<i>Descriptive Statistics</i>		
	Mean	7.86	4.16
	Std Dev	12.32	6.52
	Minimum	1.00	0.53
	Maximum	126.00	66.67
	Network Centralisation = 63.17%		

B.	<u>North West</u>		
1	NW Regional Assembly	119	58.05
2	NW Development Agency	93	45.37
3	GONW	58	28.29
4	Liverpool City Council	19	9.27
5	Trafford MBC	13	6.34
6	Liverpool Vision	14	6.83
7	Bodycote International Plc	12	5.85
8	The Mersey Basin Campaign	12	5.85
9	Healthy Waterways Trust	12	5.85
10	City Invoice Finance Ltd	12	5.85
11	Worthington Group Plc	12	5.85
12	ENCAMS	12	5.85
13	The DTI Environmental Innovation Advisory Group	12	5.85
14	EnviroLink	12	5.85
15	Jerome Group Pl	12	5.85
16	Penmarric Plc	12	5.85
17	Opal Property Group Ltd	12	5.85
18	Mercury Recycling Ltd	12	5.85
	Mean	6.15	3.00
	Std Dev	11.21	5.47
	Minimum	1.00	0.49
	Maximum	119.00	58.05
	Network Centralisation = 55.59%		

C.	<u>Yorkshire and the Humber</u>		
1	North Yorkshire County Council	116	62.7
2	Yorkshire Forward	102	55.14
3	South Yorkshire Leaders Group	20	10.81
4	Yorkshire and Humber Assembly	20	10.81
5	The Lawes Agricultural Trust Co. Ltd.	20	10.81
6	Scarborough Borough Council	17	9.19
7	The Local Government Management Board	17	9.19
8	Shieffield University Enterprise Ltd.	16	8.65
9	The Chartered Institute of Building	16	8.65
9			
	Mean	7.27	3.93
	Std Dev	11.42	6.17
	Minimum	1.00	0.54
	Maximum	116.00	62.70
	Network Centralisation = 59.41%		

D.	<u>South East</u>		
1	SEERA Assembly Adviser	86	26.46
2	SXENT	51	15.69
3	SEEDA Board	35	10.77
4	SEERA Assembly Member	31	9.54
5	Hampshire Economic Partnership Board	25	7.69
6	Thames Valley Economic Partnership Advisor	25	7.69
7	SYEP	24	7.38
8	Thames Valley Economic Partnership Member	24	7.38
9	HANTON	23	7.08
10	Thames Valley Economic Partnership Board	23	7.08
11	BEP	21	6.46
12	SEERA Economic Partner	22	6.77
13	SE Environmental Action Forum	21	6.46
14	LSC Kent	20	6.15
15	LSC Sussex	19	5.85
16	SEEDA Officer	18	5.54
17	Kent Economic Forum Board	18	5.54
18	Oxon Economic Partnership Board	13	4
19	CRYCOC	13	4
20	LSC HloW	12	3.69
1	Mean	3.73	1.15
2	Std Dev	7.32	2.25
8	Minimum	0.0	0.0
9	Maximum	86.0	26.45
	Network Centralisation = 25.47%		

Figure 1: Power curves in the four regions

