The Scaling of Power in West Cumbria and the Role of the Nuclear Industry

by

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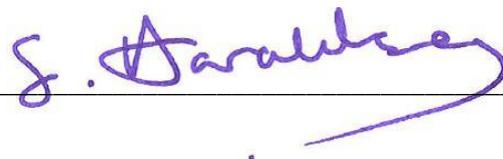
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ABSTRACT

This thesis explores the relationship between a global industrial actor and its regional host, and what that can tell us about neoliberalism and globalisation. The relationship between the nuclear industry, in particular the Sellafield site, and the West Cumbrian region where it is located is the specific focus for the data collection and analysis. West Cumbria is an isolated region in the very north-west corner of England. West Cumbria was the site of the UK's first nuclear reactors. Over seven decades, as other industries have declined, West Cumbria has become home to, and economically dependent on, one of the largest and most complex nuclear sites in the world.

The core concepts employed to analyse this relationship are power and scale. In particular, this thesis analyses how power is rescaled in the context of state restructuring and the wider changes associated with globalisation. To be able to analyse power it was necessary to develop an applied understanding of the concept. This is informed by a diverse literature, and takes an implicitly geographical and relational understanding of the exercise of power in its diverse forms, bases and uses. Firstly, policy documentation is analysed to understand the impact of the changes to the governance and management of the UK's oldest and most hazardous nuclear sites. Secondly, survey and focus group data is analysed which focusses on the position of the nuclear industry in the local economy and specific changes made as a result of the part-privatisation of the industry in 2008. Finally, an analysis of economic development plans which aim to grow West Cumbria's economy, and demonstrate an increasing priority being given to new nuclear developments. Finally, these three areas are brought together to explore how power is rescaled, its implications and the wider relevance of the thesis to other locations and policy areas.

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CHAPTER 1 - INTRODUCTION

1.1 – Motivations

West Cumbria has hosted nuclear facilities since 1947. These first facilities were for the production of plutonium for the United Kingdom's atomic weapons programme. In the intervening seven decades the industry has expanded throughout the UK and undergone significant changes, embracing civil power generation, commercial spent fuel reprocessing, research, waste management and most recently the challenge to decommission the ageing and contaminated facilities from the very early days of the industry. Many areas across the UK host nuclear sites which serve one or two of these purposes, but only one area hosts sites which include them all; West Cumbria with the Sellafield and Low Level Waste Repository Sites.

West Cumbria is a geographically remote part of the North West of England. Bounded by the Irish Sea to the West and the Lake District and Cumbrian fells to the east, it is the very top left corner of England. An area with a history of trade and heavy industry tied closely to the resources of the land and the sea, it became host to one of the most cutting-edge industries of the mid-20th century when the first nuclear reactors in the UK were built there. Since then, as other 'traditional' industries such as mining and steel works have declined, while the nuclear industry has expanded, the area has become heavily reliant on the nuclear industry.

The 1990s were a high point of nuclear activity at Sellafield, with reprocessing and fuel manufacture expanding, this was also the nadir of potential future developments for the wider industry, particularly for the prospects for new power generation across the global industry (Nuttall 2004: 2). This is the

'second phase' for the nuclear industry, following from the technology-led expansions of the previous decades, where in line with the general trend across nationalised industries what could be privatised had been and the state was managing the rest (Pemberton 2014: 6). This, however, was a short phase. In the 2000s policy towards the remaining state nuclear assets changed and these were moved to become contracted out and an end was brought to direct state provision where possible (Nuttall 2004: 3). Later in the same decade, the government policy towards nuclear new build became favourable (BERR 2007) and a new process for finding a site for the disposal of higher activity radioactive wastes was launched (DEFRA 2008). In both of these two policy changes, West Cumbria became a candidate community for development. Therefore West Cumbria is involved in every aspect of the UK nuclear industry, and has the prospect of continuing to be so for centuries, or more, to come.

The West Cumbrian community have been generally very supportive of the nuclear industry, but critical of some individual developments (Haraldsen et al 2011). Previous work has been conducted to explore the underlying basis for public opinion towards the nuclear industry in West Cumbria, revealing a community-level perspective which was important to risk perceptions (Wylie 2011). Similar effects of place mediating risk perception have been found at other nuclear sites (Venables et al 2012). Specific nuclear developments in West Cumbria have been studied. This has included proposals to site a radioactive waste disposal facility in the area which revealed the importance of the long history and legacy of the industry in the area in shaping perceptions of current and future developments (Bickerstaff 2012). More generally, changes in the way nuclear power new build is governed have been analysed (Johnstone 2014; Baker 2015). The effects of a dominant nuclear industry on surrounding

populations – the "Yellowcake towns" near uranium mines in the United States – revealed a level of domination of culture, social life and economy which had a range of impacts on different communities following the industry's decline which depended on their ability to reorient to other sources of revenue (Amundson 2002).

My own research has analysed the nuclear industry and its relationship with the communities around it, in both west Cumbria around the Sellafield and Low Level Waste Repository sites, and in north Scotland around the Dounreay and Vulcan Naval Reactor Test Establishment (NRTE) sites. This has included the failed bid to nominate two West Cumbrian sites for nuclear reactors away from the existing nuclear facilities in 2009 demonstrated that local responses to nuclear developments cannot be assumed, despite an overarching positive public opinion (Haraldsen et al 2011). Following on from a European Commission project to improve the governance of radioactive waste management, the troubled siting process of a new low level waste facility adjacent to the Dounreay site near Thurso on the north coast of Scotland revealed the importance of both those directly affected and their relationships with extant lived communities at a range of scales (Wylie et al 2016).

These studies all demonstrate the importance of the relationship between nuclear sites and the communities in which they are located, and the ability for government to enact major change in an industry which dominates its often isolated host communities. This is a relationship I have experienced. I was born and raised in West Cumbria, work in the area and have been closely involved with local politics as an elected borough councillor and parliamentary candidate. My research was motivated to further explore the relationship between the nuclear industry, particularly Sellafield, and the West Cumbrian

community. This initially took the form of an analysis of the impact of the nuclear industry on local perceptions of the scaling of their lived experience of citizenship. However, through the process of writing a thesis and having it examined, wider issues of the impact the nuclear industry has upon power and the spatial politics of West Cumbria were identified.

1.2 – Key concepts

This section introduces the key concepts of scale and power which are central to the exploration the restructuring of the state in the context of the current era of technology enabled global interconnectivity where diverse mobilities of people, information, goods, money and so on cross national borders with increasing speed and volume (Urry 2010: 353-354).   The next sub-section will introduce the concept of power, followed by scale, which will flow into a brief outline of the relationship between the two, the rescaling of power, to inform the aim and research questions in the following section.

1.2.1 - Power

Power is a broad concept, with many different forms, bases and uses (Wrong 1979). In this thesis, which explores the consequences of state restructuring in a specific industry and regional, power is still about more than simply state capabilities which are packaged and transferred between geographical scales in discrete units from the national state either upwards or downwards (Allen 2003: 2). The political science literature on power explores its many different 'faces', where there are many different ways in which one actor can influence the actions of another either through direct or less obvious mechanisms (Lukes 1974; 2005). This relies on four broad forms of power; force, manipulation,

persuasion and authority (Wrong 1979: ch2-3). Authority is what states have, and it exists where a power holder has the right to command and the subject an acknowledged obligation to obey, and the source of the power rather than its content determines its legitimacy (Wrong 1979: 49). Wrong (1979: ch3) conceives of five forms of authority; coercive, inducement, legitimate, competent and personal.

Power is therefore something which is deeply geographical. The holding of capabilities or resources are not power in and of themselves, but rather these are things which may be used as a basis for power (see Wrong 1979). John Allen argues that this use of power is not a 'thing' but something which emerges from social interaction and consequently "…geography makes a difference to *the exercise* of power" (Allen 2013: 1, *emphasis added*). Resources, as one particular example, do not follow a linear progression which equates greater resources with greater power, as they may be misused or wasted (Allen 2011: 5). For power, it is not just about the size of resources or the legitimacy of authority, these things are some of the bases of power (Wrong 1979) not power itself. Power occurs in their application by and in between social actors, so what matters is how and where these bases are used to persuade, coerce, manipulate, enable, persuade and generally get things done (Allen 2013: 6). Thus, power, authority and capabilities still matter, but their exploration needs to take into account their location and relations: in short, the context.

1.2.2 - Scale

This return to the geography of power requires a focus on scale as a key concept to the location and application of power. Scale as a concept, like power, is a broad one.

Notions of scales as ontologically pre-given, things which have inherent qualities or a 'rightness' for any particular activity, have been superseded (Smith 1992: 73; Brenner 2001: 592). Scales are instead socially constructed and relational (Penning-Rowsell and Johnson 2015: 132) by the actions of organisations, groups and individuals (Reed and Bruyneel 2010: 651). While certain scalar arrangements may be fixed for a time they are also fluid as they are challenged and remade (Brown and Purcell 2005: 610). Indeed, even the nation state scale only became the preeminent container for social and political activity in Europe in the 17th century, and later for much of the rest of the world. Other scales of social, political and economic activity have been made and remade with greater frequency, such as changes to local government, the structures of state economic intervention and so on. This process of scaling and rescaling does not happen by accident; rather it is undertaken by social actors such as politicians, economic elites, pressure groups and so on with interests to preserve or advance (Sassen 2008) who deploy scale strategically to establish, reorganise or dismantle structures or processes at certain scales (MacKinnon 2011: 32). The outcomes of processes of rescaling cannot be said to reflect the qualities of that scale, but reflect the political strategies of the actors involved in making that fix (Brown and Purcell 2005: 609). Therefore, to understand how power is scaled and rescaled, the actors and coalitions involved, their motivations, agendas, discourse and practice around particular scale arrangements are of central importance (Kaiser and Nikiforva 2008: 544; Penning-Rowsell and Johnson 2015: 132-133). However, despite being socially constructed rather than ontologically given, scale and its borders are most certainly still constructed (Reed and Bruyneel 2010: 651). Scales are thus defined, challenged and remade based upon "power relations between actors"

across a range of scales (Silver 2009: 925). Scales are therefore both fixed, in so far as they exist for a time, but also fluid as they are challenged and remade (Brown and Purcell 2005: 610).

1.2.3 – Globalisation and the rescaling of governance

In the era of hypermobility of people, capital, goods and so on (Urry 2010: 353) increasingly fragmented sub-national places (Sassen 2008: 265) seek to constitute themselves as 'scapes' on horizontally organised global networks (Urry 2010: 348). In this "new spatial form" (Castells 2010: 440) sub-national regions seek to shape and are shaped by the economic activity within them (Dicken 2007: 21-23; Coe et al 2008: 279). In this context, the ability of governments to govern alone is challenged. Authority has not simply been rescaled through a nested hierarchy of governmental scales but has rather been dispersed more widely "among a variety of private and public actors" (Kern and Bulkeley 2009: 311). Governmental authority though is "far from being a form of placeless power", it has a complex spatiality where rather than power being "exchanged more or less in tact between scales" (MacLeod and Jones 2007: 1197) government has become "centralised yet dispersed" (Allen 2004: 27). The governance landscape is thus "fragmented or 'splintered'" (Coaffee and Healey 2003: 1981) and governance may be taken to mean "governing mechanisms which do not rest on a recourse to the authority and sanctions of government" (Wilson 2003: 318) but include government among a wider array of actors in a "criss-crossing mix of distanced and proximate actions" which has "blurred" the boundary between the state and market (Allen 2004: 29) and fundamentally "between different arenas of politics" (Kern and Bulkeley 2009: 311). Indeed, the "global cities and high-tech districts" are now "partly denationalized strategic territorialisations with considerable regulatory

autonomy through the ascendance of private governance regimes" (Sassen 2008: 54-55). This has been characterised as a 'hollowing-out' of the functions of the nation state (Bulkeley 2005: 882).

This nuanced exploration of power recognises that while the state may have changed, its authority is not necessarily diminished and indeed the power and control of some scales may be strengthened (Swyngedouw 1997: 142). Authority is "polycentric" with independent centres of decision making (Ostrom et al 1961: 831). These have been manifested in the proliferation of agencies, arms-length bodies, and other governance structures undertaking regulation for the state such that now:

> [E]ach citizen . . . is served not by 'the' government, but by a variety of different public service industries. . . . We can then think of the public sector as being composed of many public service industries including the police industry, the fire protection industry, the welfare industry, the health services industry, the transportation industry, and so on" (Ostrom and Ostrom 1999, 88-89)

In the modern era, therefore, the binary divide between public and private, between the public interest and the market, no longer exists but rather governance embraces a range of actors and institutions, with their own strengths and weaknesses, in many combinations (Ostrom and Walker 1997: 36). This did not happen by accident. Sassen (2008: 5-6) argues that the global, "transboundary spatialities" which are characteristic of the current era of globalisation involved "the necessary participation of national states" in rescaling elements of their "exclusive authority". Complex policy issues "increasingly play out in multi-level and multi-scale contexts" (Lieshout et al

2010: 163) and where the role and power of the state is altered (Reed and Brunyel 2010: 251). This has given rise to new forms of "governance beyond the state" (Swyngedouw 2005: 1991). It is necessary therefore, in an age where places have become connected through global networks to remote places across continents, and closeness becomes a function of network positionality as well as geography (Sheppard 2002: 307) that we engage with these diverse interests to understand who has power and how it is used.

1.3 – Aim and research questions

This thesis aims to take forward the concepts introduced in the previous section (and developed in much greater detail later) through an analysis of state restructuring in one particular industry in a specific place; the nuclear industry in West Cumbria. The background of the industry and place are also examined later. The aim of this thesis is '*What is the relationship between a global industrial actor (Sellafield) and its regional host – and what insights does this relationship offer for understandings of neoliberalism/globalisation?'* Addressing the aim in this thesis is undertaken by addressing three subordinate research questions, which are:

- RQ1 - Political: How have local, regional and national governance arrangements been modulated through the presence and actions of the nuclear industry in West Cumbria?
- RQ2 - Social: How is the nuclear industry viewed in West Cumbria, and how has this changed in line with wider shifts in terms of state-industry relations?

- RQ3 - Economic: What are the implications for regional competitiveness arising from the changing relationship between the state and market for the nuclear industry in West Cumbria?

The following section introduces the subsequent chapters of the thesis which take the aim and research questions forward.

1.4 - Summary

Chapter two explores the key concepts and reviews the literature relating to governance, power and rescaling. It begins by considering changes which have occurred, enabled by technological advancement in travel and communication technologies, which have altered the way societies and economies are governed. The applied definition of power employed in this thesis is developed rooted in the basis of each of the three forms of power; *decision making authority, economic power* and *domination.* The chapter then explored literature related to several approaches to analysing the scaling of power– glocalisation, multi-level governance, scalar politics and post-politics. These approaches are brought together into a theoretical framework which is employed throughout the thesis, and brought together in the conclusions in chapter eight.

Chapter three describes the development of the nuclear industry, and describes West Cumbria, which gives the context for this thesis. The UK military and civilian nuclear industry has its origins in West Cumbria, where the first reactors and reprocessing facilities were constructed in the 1940s to provide the raw materials for Britain's first atomic bomb. Since then the Sellafield site, as it became known in the 1980s, grew to include more power producing reactors,

fuel reprocessing and manufacture facilities, prototype reactors, waste management facilities and other ancillary services. As the Sellafield site expanded, particularly from the 1980s, other industries in the area declined. This has led, particularly for one of the two boroughs in West Cumbria, to the Sellafield site dominating the local economy and job market. This has implications, creating a two-tier labour force of very well paid nuclear workers, and relatively poorly paid non-nuclear workers. This particularly excludes certain groups, such as women.

Chapter four outlines the research journey and the research design from ontology through to methods employed to gather data. This thesis had a complex journey from initial research design, through data collection to get to this point, following an initial submission and resubmission. This means that the research question emerged from the data, but the research design did not. My own position as a researcher, conducting research in an area where I had both grown up, lived and was also an elected borough councillor at the time, is discussed. The specific details of each data collection method -survey, focus groups, document analysis and interview - are described.

Chapter five is the first of three data analysis chapters. In this chapter, changes to the governance of the nuclear legacy are analysed. The legacy consists of the ageing facilities which were not privatised in the 1990s and are at or near the end of their lives and the current and future wastes arising from their use and decommissioning. The moves from a nationalised but arms-length commercial company managing the bulk of the ageing nuclear legacy, to a complex system of multilevel governance with public ownership and private management, then to direct public control are analysed. The moves from nationalisation, through part-privatisation, and back to nationalisation had a

range of implications for how, by whom and for what purpose state authority is wielded in the nuclear industry. This has implications for the workforce and community, particularly with regards their term and conditions of employment. However, it is not the privatisation but the renationalisation which has the most detrimental effect on the rights of workers in the industry. The management of wastes and the search for an underground disposal site, which has been ongoing under three different policies since the 1980s, is analysed. The failures of policies towards decommissioning and waste management have a similar basis in the overreliance on a limited, albeit different, range of tools government has at its disposal to achieve its aims. In both cases power is rescaled as government applies different tools to the problems it faces in dealing with the nuclear legacy. This has implications for West Cumbria, as the major site for decommissioning and the only site explored for hosting an underground waste disposal site in the past 25 years, which are analysed and discussed in this chapter.

Chapter six takes and analyses in greater detail specific changes which resulted from the change in governance of the Sellafeild site in West Cumbria. These changes are explored in the context of a complex, contradictory local public opinion towards the nuclear industry. Despite overwhelmingly positive public opinion towards the industry in general, a significant minority and in some areas a majority of residents expressed a belief that West Cumbria does not see a great enough benefit from hosting nuclear sites. The issue of corporate responsibility, or lack thereof, of the Sellafield site is discussed. Changes made following the privatisation of the management of the site highlight the role of local elites in the exercise of significant economic power and suggests that they

have interests to serve which are contradictory to the interests of their new host community.

Chapter seven analyses local economic development strategies and plans. Following on from the issues of responsibility and duty considered in the previous chapter, there is no significant attempt made to diversify the local economy away from one heavily reliant on the nuclear industry. The regional ambitions of the nuclear industry are constrained by central government in this still very centrally controlled and regulated industry. As government policy changes, however, plans are modified. Domination of the economic development arena locally by nuclear interests leads to plans which are increasingly focussed on maintaining and expanding the dominance of the nuclear industry in the West Cumbrian economy. Domination is not in this case met by resistance, despite a widespread recognition that the area suffers problems from its overreliance on this single industry. There is no real opposition to the general trend to place nuclear at the centre of economic development plans and perpetuate the current skewed labour market. However, despite their local domination, attempts by local networks of pro-nuclear actors to influence government and bypass economic development organisations at higher scales between local and national are met with little success.

Chapter eight summarises the data in the thesis and resolves the three research questions. Limitations of the research, particularly arising from the single case study, are discussed and in the context of the findings and directions for future research are suggested. The lessons from this thesis which may have relevance to upcoming policy developments are discussed, which complement the potential areas for future research.

CHAPTER 2 – LITERATURE REVIEW: THE SCALING OF POWER

2.1 - Introduction

This chapter reviews the literature relating to governance, power and rescaling. It begins by setting out an applied and contextual understanding of power and scale before moving to consider what governance is and the implications of these changes, enabled by technological advancement in travel and communication technologies, which have altered the way societies and economies are governed. The chapter then explores literature related to several approaches to analysing the scaling of power: glocalisation, multi-level governance, regionalism, scalar politics and post-politics. Finally, these approaches and the wider theoretical and empirical context are brought together into a framework for the later analysis of data in this thesis. The summary brings together the key elements relating to the application of these approaches to understanding the scaling of power – its location, content and outcomes. This chapter therefore sets out the approaches to understanding how the state at various levels, economic and industrial actors, and regions interact and affect each other in the context of the changes to the structure of modern economies and states.

2.2 – Power and scale

Power is a broad concept, with many different forms, bases and uses (Wrong 1979). In this thesis, which explores the consequences of state restructuring in a specific industry and region, power is still about more than simply state

capabilities which are packaged and transferred between geographical scales in discrete units from the national state either upwards or downwards (Allen 2003: 2). The political science literature on power explores its many different 'faces', where there are many different ways in which one actor can influence the actions of another, either through direct or through less obvious mechanisms (Lukes 1974; 2005). Such influence relies on four broad forms of power; force, manipulation, persuasion and authority (Wrong 1979: ch2-3). Authority is what states have, and it exists where a power holder has the right to command and the subject an acknowledged obligation to obey, and the source of the power rather than its content determines its legitimacy (Wrong 1979: 49). Wrong (1979: ch3) conceives of five forms of authority: coercive, inducement, legitimate, competent and personal. As explored earlier, the restructuring of the state has seen a broadening of the range of actors involved in the governance of the state and a complex redistribution of the locus of power within and beyond its sovereign territory. This has led to non-state actors and new scales being the locus of legitimate authority. However, the rescaling of power is not something which the state necessarily has directed, but a more complex and place-specific set of negotiations, actions and struggles (Allen 2003).

Power is something which is deeply geographical. The holding of capabilities or resources are not power in and of themselves, but rather these are things which may be used as a basis for power (see Wrong 1979). John Allen argues that this use of power is not a 'thing' but something which emerges from social interaction and consequently "…geography makes a difference to *the exercise* of power" (Allen 2003: 1, *emphasis added*). Resources, as one particular example, do not follow a linear progression which equates greater resources with greater power, as they may be misused or wasted (Allen 2011: 5). Power

is not just about the size of resources or the legitimacy of authority, these things are some of the bases of power (Wrong 1979) not power itself. Power occurs in their application between social actors, so what matters is how and where these bases are used to persuade, coerce, manipulate, enable, persuade and generally get things done (Allen 2003: 6). Thus, power, authority, capabilities still matter, but their exploration needs to take into account their location and relations: in short, the context.

This return to the geography of power requires a focus on scale as a key concept in analysing the location and application of power. Scale, like power, is a broad concept. For this thesis, scale is conceived as a result of action, and any particular 'scalar fix' is a temporary stabilisation, not representative of any inherent quality or rightness of that scale (Brown and Purcell 2005: 607). The remaking of different scalar 'fixes' is the result of successful or attempted re-ordering of the importance of the different dimensions of spatial relations (Jessop et al 2008: 397). Scale is, like networks, territory and place, just one of the many different forms of socio-spatial relations which do not exist in isolation (Jessop et al 2008: 396). Thus, scale is not a given – it is constructed, contested, made and remade, by actors (individual, corporate, governmental etc.) with interests to serve. These themes in power and scale, as a brief introduction, will emerge further through the subsequent sections of this chapter.

2.3 – Globalisation

Globalisation is a contested concept, where many definitions abound. A simplistic characterisation places the definitions on a spectrum from the hyperglobalist, arguing that we are headed towards a culturally homogenous

borderless world, to the sceptical which contends that globalisation is merely increased global trade, at levels which are not novel. Neither extreme is right, but nor are either completely wrong; there are elements of each which contribute to a more nuanced understanding of globalisation and its impacts.

Technological changes have connected distant places, which while not at quantitative levels measured by trade which are historically novel (Hirst and Thompson 1996; Hirst and Thompson 2002), are at a speed, frequency and ease which is certainly different from what came before (Jones 2010: 12). Indeed, if the definition of globalisation was simply "growing international connectedness" then the latter half of the twentieth century was "not remarkable compared with the period 1850 to 1914" (Hirst and Thompson 2002: 247). As in the period following the First World War, it is conceivable that interconnectedness could again reverse as a result of "national backlash strategies of local withdrawal from the global system" particularly given that "economic convergence ... was largely achieved by vast flows of surplus labour" which is under pressure to be restricted in the developed world (Hirst and Thompson 2002: 248-249). The implication of Hirst and Thompson's arguments is that while the empirical reality of increased interconnectedness at the end compared to the middle of the 20th century cannot be denied, it is not historically unknown when measured by volume of trade. However, sceptical accounts fail to recognise the complex and fluid nature of social relations and the qualitative difference in current interconnectedness as compared to previous eras (Jones 2010: 52). That is to say there is a difference between boats sailing the high seas at the start of the 20th century and high speed financial transactions at the start of the 21st.

The other end of the spectrum, the hyperglobalist accounts of globalisation argue that the nation state is undermined by changes in global politics and the technologies which enable movement of capital, people and so on across the globe. The changes seen in the latter half of the twentieth century and in the 1980s in particular gave rise to transnational cultural symbols; a shift from multi-national corporations which owed allegiance to their host nation to the modern, footloose transnational corporation which rather than having any loyalty to a particular state inculcates loyalty to the company among workers, in particular global elite managers; and, increased global migration undermining national cultures and allegiances (Myoshi 1993: 248-250). However, while these may all, in part, be true, their extent and impact has not proven to be dramatic, with the nation state remaining as a locus of identity and a significant authority within its borders (Norris and Inglehart 2009: 310).

Drawing upon the persuasive elements of both these opposing accounts, globalisation can be understood as referring "to patterns of growing global interconnectedness within all the key domains of social activity" which are differential across different domains, and thus to understand globalisation it is necessary to understand the pattern in each domain, as "far from being a singular condition [globalisation] is best conceived as a differentiated and multifaceted process" (Held et al 1999: 27). This account of global change, which sees technology enabled interconnectedness across vast distances, implies that networks and territory should not be viewed as mutually exclusive categories (Painter 2010: 1093), but that space and place, global and local interact in complex, specialised and specific ways. This interaction creates 'zones of interaction', or the 'sites of power' (Held et al 1999: 28), where the

different spatialities of the local and global interact and conflict creating novel geographies (Sassen 2008: 394).

Interconnectedness in this regard refers to flows which are relayed across networks and akin to a global circulatory system for our economic and social life. Flows refer to the movement of diverse mobilities of "peoples, objects, images, information and wastes" and the complex interdependences between them, which are to be understood as being horizontally organised into networks (Urry 2010: 347-348). There are two types of mobility; the 'global fluids', which are unpredictable mobilities such as people, money, risks and so on and 'global networks' which are specific, organised networks such as production networks (Urry 2010: 355). The "dominant functions and processes in the Information Age" are "increasingly organised around networks", which take the form of "interconnected nodes" such as a stock market in a global financial network (Castells 2010: 500). For economic activity the nodes, zones, sites, or however one classifies them, manifest themselves as specialised Global Production Networks (GPN), which can be characterised as - "processes of 'placing' firms and 'firming' places" (Coe et al 2008: 279). Indeed, the argument that large firms are losing any geographical identity and place is dismissed by Dicken (2004: 13) as "a nonsense unsupported by empirical evidence". Embeddedness, in all its physical and non-physical elements, from the site of the actual factory to the relationships with local communities, is part of the qualitative difference with earlier periods of global trade, which saw 'shallow integration' revolving around trade at arms-length between independent firms, compared with 'deep integration' today involving geographically extensive global production networks (Dicken 2012: 6-7).

A space of flows does not therefore bypass places or render places obsolete, but connects places together (Castells 2010: 443). Within such sub-national places these "overlapping and interacting networks define an evolving structure which both imposes constraints on and empowers communities, states and social forces", which is stratified, reflecting "existing patterns of inequality and hierarchy while also generating new patterns of inclusion and exclusion" (Held et al 1999: 28). Inequality is reinforced and created as power is reinforced and redistributed due to the impact of global interconnectedness. Existing inequalities are reinforced as there is a degree of path dependency demonstrated in the connection of "sites of power" (Held et al 1999: 28), as global interconnectedness is a process which builds upon "the preceding state of affairs" rather than causing radical change as the result of new technologies and opportunities (Peck and Theodore 2007: 748-749).

This conception of global change based on the increasing flows of a diverse array of mobilities such as information, money, people and so on therefore involves the networked rescaling of economic activity as outlined. This is only one aspect of the change. Sassen (2008: 5-6) argues that the global, "transboundary spatialities" which are characteristic of the current era of globalisation did not happen by accident, but involved "the necessary participation of national states" in rescaling elements of their "exclusive authority". In the context of governing within the national state boundary this is leading to increasingly fragmented sub-national places (Sassen 2008: 265). In this context, while the "discretionary powers of the state" to shape national economies have declined, the importance of local conditions increased (Swyngedouw 1989: 31).

This conception of globalisation's multiple processes implies a vision of economic activity and regulation which sees sub-national regions as strategic sites and thus from this flows the rest of the chapter. The following sections explore how these scales are constructed, maintained and changed – essentially how power is rescaled, held, employed, challenged and so on, by and for whom in the context of the neoliberalisation of the state. Essentially, the question is, to paraphrase Ted Heath, 'who governs, how and why?'

2.4 – Governance

The authority we grant legitimacy, by our agreement to it freely and on the basis of our shared values in any given political society, is the basis of how we are governed in the modern (post-feudal) era in democratic countries. However, this is a blanket basis for power and does not say anything about how power is actually wielded, which is particularly salient in the context of global change which has led to, and been led by, changes to the state and economic activity.

In the current era we see state power exercised by a range of actors. While it would be simple to assume this means a diminution of state power, this ignores that the state remains the ultimate source and guarantor of legitimate authority within its borders. Thus, it is helpful to conceive of state power as a wide range of specific 'capabilities' which can be (temporarily) transferred to and exercised by non-state actors, where "it is not the national state as such, in its totality, but particular components that are undergoing denationalization" (Sassen 2008: 8). The partial denationalisation of the state as specific functions, or capabilities, which are transferred to the private sector results in the creation of markets, where previously there were none, which are neither fully public nor entirely

private (Sassen 2008: 199). These are "novel mixes" combining public functions and market techniques which create "governance challenges" which "cannot be analysed adequately in terms of traditional categories" (Sassen 2008: 198). The marketization of certain state functions can impact the rights of citizens, depending on the function in question (Amin 1994: 99-101). This impact is context specific, as not all services involve rights, and as a consequence context specific analysis is particularly important, especially given that evidence is growing to suggest that market discipline does not necessarily improve public services, such as in the UK context the failed privatisation of the railway track (Sassen 2008: 198). Thus, to consider how power is exercised, it is necessary to consider how we are governed in the places that people live and work with a focus beyond, and below, the national scale.

Broadly defined, governance is "the means for authoritatively allocating resources and exercising control and co-ordination'' (Rhodes 1996: 653). However, given that in this thesis the context for the exploration of governance is the way in which global industrial actors interact with and affect their regional hosts across political, social and economic impacts, it is necessary to arrive at a more specific understanding of what governance means in that context. This understanding will build upon the earlier exploration of globalisation, which covered the changes which have occurred to enable and require a move beyond the state in the exercise of authority. Building on Rhodes' (1996: 653) definition, it is clear that for the acts of "control and co-ordination'' aimed at "`steering' a society or polity" (Lowndes 2001: 1961) which define governance state actors are not necessarily the most important, and rather than seeing such a stark state/non-state or government/governance divide, the reality is of a continuum with a variety of systems of governing where the various actors play

a diverse array of roles (Bulkeley 2005: 877). The involvement of "quasi- and non-state actors in a range of public–private partnerships" can be characterised as the "shift from government to governance" (MacLeod and Goodwin 1999: 506). For its part, the state has moved on from the 'gardening' state, concerned with the careful planning of the economy and society within its borders, to the 'game keeping' state, more concerned with attempting to regulate the diverse mobilities of people, information, goods, money and so on which cross national borders with increasing speed and volume (Urry 2010: 353-354).

In the modern era therefore the state has withdrawn from certain functions, transferred others to private and other non-state actors, retained others and generally delivers functions in more complex ways which has led to different interpretations of the "new geography of governance" such as have variously been called 'glocalisation', or the 'hollowing-out' of the functions of the nation state (Bulkeley 2005: 882). This implies that state restructuring and the rescaling of state power has increased the salience of place or territory (Painter 2010: 1092). Indeed, the "global cities and high-tech districts" are now "partly denationalized strategic territorialisations with considerable regulatory autonomy through the ascendance of private governance regimes" (Sassen 2008: 54-55). Therefore, rather than seeing state authority as merely diminished, the issue of how the state wields authority in the modern era and also how autonomous regions seek to exploit the withdrawal of the state from certain functions to regulate themselves takes on a particular importance. This is, as explored earlier, context specific and varies from place to place. Thus, to understand governance it is necessary to engage with both structure and process to include the "rationalities, agencies, institutional relations, and

technologies of governing that coalesce around particular objectives and entities to be governed" in a particular context (Bulkeley et al 2007: 2733). In this context, while authority and legitimacy reside with nation-states, "social institutions that consist of agreed upon principles, norms, rules, decision-making procedures, and programmes that govern the interactions of actors in specific issue areas" (Young 2007: 5-6), are formed in a specific issue area to facilitate cooperation by providing information and reducing transaction costs. These 'regimes' can both strengthen the state, by ensuring a role for the inter-state system, and bypass the state by allowing actors beyond the state to gain a role in regulation of what is considered "sovereign space" (Bulkeley 2005: 878).

2.5 - Glocalisation

The dominant structure of economic activity in the post-war period up to the 1970s was, as has been mentioned, the Fordist model of large vertically integrated organisations which, for the most part, were contained within nation-states, thus economic activity and the territorially defined dominant scale of regulation were well matched. This placed limits upon what was possible which technological and other changes overcame in the 1970s and 1980s (Swyngedouw 1989: 35) such as:

- Limits to spatial market expansion in a given distribution of income
- Limits of exploiting spatial variations in wages and labour conditions (especially when workforces were heavily unionised and national collective bargaining the normal)
- Limits of time/space distanciation, where ultimately the time/cost savings of distance were ameliorated by advances in technology

- Limits of geo-politics, in an era of Cold War and two dominant power-blocs, where expansion was confined 'the west' (prior to China, in particular, becoming a major economic player).

The state in this period can characterised by the metaphor of the 'gardening' state which is concerned with the careful cultivation of many aspects of life (economic, social and so on) within its borders, as opposed to the 'game keeping state' which came both before and after, more concerned with attempting to regulate the diverse mobilities which cross its borders (Urry 2010: 353-354). The changes which enabled the shift from the very nationally organised and regulated Fordist economy, to a state concerned with the diverse mobilities of people, information, goods and services and so on are built upon modern travel and communication technologies, starting with the telegraph, the jet engine through to high-speed internet in the 2000s and beyond. Technological changes such as these were the necessary foundation for what Manuel Castells (2010: xvii) calls "the network society" where "a number of major social, technological, economic, and cultural transformations came together" in the latter-half of the 20th century.

As places become connected through global networks to remote places across continents, closeness becomes a function of network positionality as well as geography (Sheppard 2002: 307). While intrinsic characteristics of an area are important to becoming a node on such networks, the relative position of places on their global networks matters too. Assuming that the network, flowing around the world from place to place, is homogenous space masks the reality that certain places are more central to the network than others and thus more powerful – such as hub airports in the global network of air traffic, for example.

Thus, once established on the network, the "relative location matters much more than territorial conditions" (Sheppard 2002: 312-317). Positionality, like power, is a zero-sum game, such that if one place becomes more central to the network, other areas become more peripheral by default. Thus, far from eradicating difference, globalisation can reinforce existing patterns of inequality and create new ones when the connection of places through networks and the position of places on each network "strengthens existing inequalities but sets in motion a whole series of new dynamics of inequality" (Sassen 2000: 85).

The networked rescaling of economic and social activities has been accompanied by and requires the territorial rescaling of governance both upward to the supra-national and downward to the regional, local and individual. Functions which were once exercised by the nation state, particularly economic intervention and governance, are de-nationalised through the privatisation of state owned industries, and post-nationalised to self-evidently supranational bodies such as the European Union (Sassen 2008: 305). These rescalings mean that while the "discretionary powers of the state" (Swyngedouw 1989: 31) to shape national economies have declined the importance of local conditions has increased. Local "territorial production systems" emerge which are locally specialised, yet "articulated in national, supra-national and global networks" (Swyngedouw 2004: 38). Local places exploit their unique characteristic for competitive advantage against competitor locations around the globe. However, this does not happen by accident, local characteristics have to be built upon. In the absence of the national state planning the economy "economic elites shape local conditions" (Swyngedouw 2004: 38). This has two main elements; firstly, there has been a territorial rescaling of welfare provision, collective wage bargaining and economic intervention to more local and

individual levels (Swyngedouw 2004: 40-41) which increases the ability to differentiate different local places within the same nation-state. Secondly, there is the physical infrastructure required, which may be, for example, city-regions seeking to have hub airports, or some places may "even seek to reprocess nuclear waste products" (Urry 2010: 193) and thus become better connected and more central to particular global networks. As mentioned earlier, Dicken (2007: 21-23) highlights the propensity for firms to form 'localised geographical clusters' which are 'generalised' or 'specialised' i.e. cities as an example of generalised clusters where the peripheral activities common to many firms and their employees can be located, and science parks (a classic UK example from the past 20 years) where closely related industries locate as an example of a specialised cluster (see West Cumbria and the nuclear industry in the previous and later chapters). These clusters, as geographical networks and a part of the wider organisational network, create and rely on dependences such as the direct relationships between firms and the less direct benefits, such as the ability to meet, or the proximity of unrelated but vital elements for the workforce such as cultural entertainment.

Establishing clusters and making firms embed locally requires action. The devolution of governance of economic intervention to more regional levels has over the past twenty-five years seen many initiatives such as Enterprise Zones, Regional Development Agencies and now Local Enterprise Partnerships set up at regional and local levels to undertake activities to make their areas grow and be more competitive. These partnerships between public and private sector are intended to undertake activities to make their local regions more competitive. In a fragmented economy where mobile capital is embedded locally, these networks involving public and private elites, or 'growth coalitions' (Swyngedouw

and Baeten 2001: 833-834) are a key driver of local and regional growth. However these 'glocal elites' are not local and may not be willing to fully engage with local coalition building and network formation with existing local elites whose priorities may conflict with their own less local (more corporate, short—term) ambitions, strategies and goals (Swyngedouw and Baeten 2001: 827). This is problematic, when economic success in the competitive, inter-local global economy and the recalling of state intervention involves "new global/local institutions, in close cooperation with private capital, [which] launch the redevelopment largely on the back of public funds" (Swyngedouw 1996: 1503). This points out a key difference between the US ideal of a private-sector led 'growth coalition' and the reality in the UK and Europe where such bodies are in reality 'grant coalitions' seeking to attract state funds (Cochrane et al 1996: 1331).

In practice the key rescalings which Swyngedouw (2004: 40-41) argues as characterising 'glocalisation' are:

1. Capital/labour relations devolve from national collective bargaining to more regional/local forms of negotiation;

2. Welfare provision becomes less national, more local and individual;

3. Inter-local cooperation is replaced by inter-local competition as regulation is devolved;

4. Intervention in the economy by the national state decreases and is devolved to more regional/local levels; and,

5. Rescaling often takes place through authoritarian processes with issues around democratic deficit in any new forms of governance (at both the local and supra-national level).

2.6 - The politics of scale and 'scalar politics'

Scale is fundamental to how we conceive of social life and its spatiality (Herod and Wright 2002: 4). Scale is one of the principal ways to theorise and explore the "spatiality of social relations" which is "mutually constitutive and relationally intertwined" with networks, territory and place (Jessop et al 2008: 390). The classification of scale developed by Sayre (2008) recognised this complexity, placing scale into three categories; scale as size, as level and as relation. The conception of scale as size and as level are both reasonably self-explanatory, something is bigger or smaller than something else or is ordered higher or lower. However, scale as relation does not imply hierarchy or size, but instead places the focus on processes "rather than scale *per se*" which are "simultaneously spatial and temporal" (Sayre 2008: 105). Thus, scale is neither pre-given, nor permanent, but rather merely fixed for a time in the wider context of spatial and temporal fluidity (Brenner 2001: 600). In this sense, any particular scale is only the "temporarily stabilised effects" of a wide range of social and spatial processes (Brenner 2008: 70). This relational conception of scale implies that it is not through analysis of any particular scale itself, but the processes of rescaling, which is important (Brenner 2009: 71).

This conception requires that distinction be carefully made between scale's two moments: the ontological moment, as differently scaled processes; and the epistemological moment, how scale is discussed and classified which result in

those processes being scale din a particular way (Sayre 2008: 105).   Any given scale is not "ontologically given", having no inherent qualities of its own, but rather scale is made and sustained by social action, by social actors, with specific interests (Smith 1992: 73). Thus the outcomes of processes of rescaling cannot be said to reflect the qualities of that scale, but reflect the political strategies of the actors involved in making that fix (Brown and Purcell 2005: 609).

The politics of scale is "highly contested, involving numerous negotiations and struggles between different actors as they attempt to reshape the spatiality of power and authority" (Leitner 2004: 238-239). This process? involves the strategic deployment of scale to enhance the influence of certain actors and interests in fights and struggles (or other expressions of differing priorities) which are in competition (Penning-Rowsell and Johnson 2015: 131-132) for control over economic, cultural and political space (Leitner et al 2002: 297). Although the language of fights and struggles implies open conflict, this is not necessarily the case and the scalar interests of actors may not be explicit and only one part of a wider array of imperatives and drivers for change (Penning-Rowsell and Johnson 2015: 139).

However, just because something is organised at one or a set of particular scales, it does not necessarily follow that there are 'scale effects' (i.e. a self-contained, localised politics of scale) and caution must be exercised in considering the politics of scale that other geographical concepts such as place, spatiality and so on which can cover the creation of space, might not be better suited to explaining a particular outcome, and this depends on the relationships, embeddedness and relations of positionality any given scale has with other smaller and larger scales (Brenner 2001: 600). The politics of scale is

therefore, as for scale itself, a relational concept where the key is not the scale but the differential scaling of processes and institutions and the interplay between them rather than events at one particular scale (MacKinnon 2011: 22). Indeed, MacKinnon contends that "the politics of scale are not fundamentally 'of' (about) scale" per se but about political projects which have scalar implications where scale is deployed strategically by various actors, movements and organisations, which he clarifies in terminology as 'scalar politics' (MacKinnon 2011: 32).

MacKinnon's (2011) clarification is not a mere point of pedantry, but rather it is a theorisation of the politics of scale which orients theorisation towards the politics and away from the scale. This is important, given the relational nature of scale and the lack of any particular pre-given ontological qualities as explored earlier. There are four key dimensions to the concept of scalar politics (MacKinnon 2011: 29-30):

1. The politics of scale is not fundamentally about scale, but about political projects which have scalar implications. Political projects are about controlling and influencing areas of policy and social activity, where scale may be an important dimension depending on its empirical significance.

2. Scalar politics, rather than taking scalar classifications as a given, instead focuses on how scale is deployed strategically by those actors and organisations involved in political projects and initiatives. Attention focuses on how particular scalar classifications are naturalised and normalised, and challenged, by political action.

3. The focus of attention is upon the interaction (or conflict) between existing scalar structures, constructed by past social action, and emergent social processes and activities.

4. Existing scalar constructions are therefore made and re-made at the point of interaction between existing and emergent projects and scales.

The implication is that political projects and movements only have scalar implications as they deploy, or conflict with, inherited scalar constructions. Scalar politics clarifies the role of scale in political projects by cautioning against taking scale as either entirely pre-given or always emergent, and instead recognising it as something which is made and re-made where existing structures interact with emergent projects which strategically deploy their own conceptualisation of the construction of scale for their own ends. As MacKinnon (2011: 29) cautions, it is necessary to "avoid imposing scale as a conceptual given upon particular research problems, letting it emerge as a dimension of contentious politics according to its empirical significance".

Employing this approach in practice involves exploring the ways in which actors invoke particular scales strategically, to what end and how this is achieved through relational networks and coalition building. As a result, scalar politics is "an integral part of strategies of empowerment and disempowerment" (Bickerstaff and Ageyman 2009: 797) central to glocalisation and territorial rescalings of power. In short, theorising and exploring how scale is deployed, by whom and what implications this has for existing scalar structures is the purpose of approaching political projects in this way to enrich our understanding of how empowerment and disempowerment are realised in practice. Specifically for this thesis, hazardous land uses such as nuclear sites are inherently scalar as the costs and benefits have an uneven spatiality where, for example, "locally experienced sources of pollution are inevitably rooted in political–economic relations and processes distributed across far-reaching spatial networks" (Bickerstaff and Ageyman 2009: 784).

2.7 - Multi-level governance

Originating out of attempts to understand the operation of European Structural Funds (Faludi 2012: 200) multi-level governance focussed on the "multi-level polity" (Marks 1992: 233) and could more accurately be called "multi-level government" due to a focus on constituted forms of government at a range of scales from sub- to supra-national (Jordan 2001: 201). The reform of Structural Funds in the European Community, and the direct linkages between the European Commission and sub-national authorities challenged the view of the European Community as an intergovernmental "club of member states" (Faludi 2012: 201). The approach has since broadened to include state and non-state actors and the complex networks by which governance is achieved (Marks et al 1996: 346).

While multi-level governance can be interpreted as simply the "shifting [of] competencies between local, national and supranational governmental institutions", it is also open to a more complex interpretation taking into account the "entire range of institutions and actions which provide order (including public-private partnerships, non-state actors and so on)" (Kern and Bulkeley 2009: 311). This interpretation recognises that authority has not simply been rescaled through a nested hierarchy of governmental scales but has rather been dispersed more widely "among a variety of private and public actors" (Kern and Bulkeley 2009: 311). The governance landscape is thus "fragmented or 'splintered'" (Coaffee and Healey 2003: 1981) and governance may be taken to mean "governing mechanisms which do not rest on a recourse to the authority and sanctions of government" (Wilson 2003: 318) but include government among a wider array of actors.

The location of power involves financial constraints, distant shareholder interests, complex incentives resulting in a "criss-crossing mix of distanced and proximate actions" which has "blurred" the boundary between the state and market (Allen 2004: 29) and fundamentally "between different arenas of politics" (Kern and Bulkeley 2009: 311). In this context, while "far from being a form of placeless power", authority has a complex spatiality where rather than power being "exchanged more or less in tact between scales" (MacLeod and Jones 2007: 1197) government has become "centralised yet dispersed" (Allen 2004: 27). This nuanced exploration of the rescaling of power recognises that while the state may have changed, its authority is not necessarily diminished and indeed the power and control of some scales may be strengthened (Swyngedouw 1997: 142). The enduring strength of the state within this complex transfer of powers and responsibilities lies in the way authority is transferred between scales as a "capability" (MacLeod and Jones 2007: 1187) which both has the state in the background as its ultimate guarantor and the potential to be recalled and exercised by the state itself.

This does not preclude the importance of territory in multilevel governance:

- It would be wrong to assume that existing territory dictates governance. Territoriality is "a spatial strategy to affect, influence or control resources and people, by controlling area" (Slack 1986: 1). So, as far as physical geography may dictate the territoriality of governance, it is also the case that boundaries are the "outcome of efforts to achieve particular ends with concrete implications for how things are organised and how people think about the world around them" (Murphy 2008: 91). Therefore while administrative boundaries are important, they are also permeable, so

while people or companies may have a physical address which locates them within a certain scale, they also participate or establish networks which cut across these administrative boundaries (Faludi 2012: 205).

- The conception of multilevel governance as a nested hierarchy of distinct territorial scales while simplistic is borne out by empirical investigation of local services where the impact of regulation emanating from each scale on service delivery was ranked in the order expected (Entwistle et al 2014: 321). Additionally, in terms of the interaction between levels in Europe, the state retains an "extended gatekeeper role" preventing local government from affecting the European level by "scale jumping" and bypassing the national state (Entwhistle et al 2014: 322). This begins to introduce the importance of distinguishing between different types of multilevel governance.

While governance involves a range of actors at a range of scales operating with differing spatial extents, it is still the case that "every citizen is located in a Russian doll set of nested jurisdictions where there is one and only one relevant jurisdiction at any particular territorial scale (Hooghe and Marks 2010: 17-18). These distinct jurisdictions, with specific competencies reserved for each scale are Type I multi-level governance. Recognising that this is not always the case, Type II multi-level governance is characterised by jurisdictions which are "flexible and task specific" with memberships which "criss-cross judicial boundaries" such as issues of river basin management, highways management and hospital administration (Faludi 2012: 203). It has been argued that under this wider conception of what constitutes multi-level governance "boundaries between different arenas of politics have been blurred to the point of insignificance" with policy actors not being confined to any single level, with

phenomena such as "venue shopping" (Kern and Bulkeley 2009: 311-312) under conditions of territorial competition and hyper-mobile capital. However, while boundaries themselves are less relevant as a barrier, the territories they define are still important, particularly as Armitage (2008: 8) argues that any consideration of governance in a multi-level world must "incorporate […] underlying social processes and values" particularly when for those at a local level the "historical-cultural experience" is important (Armitage 2008: 24).

As a result of viewing governance as a multi-levelled phenomenon, we can see that it includes not only the provision but also the "catalysts for governance [which] may come from a formal policy or law, or emerge as a result of wider social/political pressures" (Armitage 2008: 11). In practice this is seen in the UK where, for example, local authorities and government agencies may have both statutory duties they must undertake and discretionary ones they may choose to undertake, resulting in a mixture of "specific competencies and local discretion" (Bulkeley and Kern 2006: 2239) to respond to issues and needs at a local level. Service delivery in this context is less about direct provision and more focussed on commissioning services from an array of providers from different sectors (Leach and Percy-Smith 2001: 29).

Consequently, in the modern era, authority is "polycentric" with independent centres of decision making (Ostrom, Tiebout and Warren 1961: 831). For Type II governance which is of very specific interest to this thesis later, decision making authority and implementation is shared among an array of actors, including government, such that the binary divide between public and private, between the public interest and the market, no longer exists but rather governance embraces a range of actors and institutions, with their own strengths and weaknesses, in many combinations (Ostrom and Walker 1997:

36). Type II governance is therefore about being specific to a task rather than having multiple competencies within a certain territory. Each Type of governance is not mutually exclusive, but good at different things, where Type II in particular can be specific to a policy problem and flexible enough to be brought into existence and modified as required (Marks and Hooghe 2004: 28). As a consequence, "industries" emerge:

> [E]ach citizen . . . is served not by 'the' government, but by a variety of different public service industries. . . . We can then think of the public sector as being composed of many public service industries including the police industry, the fire protection industry, the welfare industry, the health services industry, the transportation industry, and so on" (Ostrom and Ostrom 1999: 88-89)

One of the major drivers of Type II governance is changes to the way in which government exercises its authority through privatization, outsourcing, administrative decentralization and other diversification of modes of governing (Marks and Hooghe 2004: 25). However, the assertion that this necessarily diminishes the role of government (Marks and Hooghe 2004: 25) is contested. Baker (2015: 250-251) argues that "the notion that government has become a diminished entity … whose powers have been constrained or transferred" is overly simplistic and that government retains a "peculiar position" as "the actor of last resort who determines the rules of the game whilst guaranteeing the integrity of the network". A weakness of MLG is its poor account of "the practice of governance" which reveals the unique role government can still play (Baker 2015: 250). Rather than being simply diminished by a shift to governance, government still possesses a range of 'tools' by which it can achieve its aims from its unique position.

The 'tool of government' approach (Hood 1986; Hood and Margetts 2007) proposes a framework of four 'tools' by which government achieves change: nodality, authority, treasure and organisation (NATO). Nodality involves information and the ability of government to persuade. Authority is the ability of government to arrange, instruct and enforce structures and rules. Treasure based tools, or "chequebook-government" (Hood 1983: 40) involve government incentivising actions. Finally, organisation tools relate to the ability of government to provide directly through, amongst other elements of state organisation, its "stock of people" (Hood 1983: 6). So, even for diverse type II governance arrangements decisions are able to be countermanded by the state at its 'higher level' of authority, as well as being able to be contested by stakeholders at lower levels (Baker 2015: 250).

In practice, an example which is later very similar and applicable to nuclear decommissioning in the UK is the system for private involvement in the railway:

> … public ownership of the rail system in Britain has been replaced by private provision organized on a contractual basis with central government. This is Type II governance, not market competition. Central government remains accountable for the quality of service, but private firms contract with the government to provide it and, for the duration of the contract, they exercise considerable autonomous authority in doing so. (Marks and Hooghe 2004: 25)

There is of course market competition for the contracts, but it is not a wholly market led process. Capabilities (i.e. government authority) are transferred to private agents, within certain confines but with considerable freedom.

2.8 - Regionalism

'Old' regionalism was a top-down approach to sub-national economic and social life which mobilised the regional scale as part of the wider Keynesian approach to correcting uneven regional development in an overwhelmingly national economy (MacLeod and Jones 2007: 1180; Amin 1999). The changes which have since occurred in advanced economies, such as deindustrialisation and the mobility of capital, make regions compete on a global stage for economic activity and growth. Consequently, regionalism is concerned with (MacLeod and Jones 2007: 1178):

- The economic success of some regions (and thus conversely the comparative lack of success of other regions and scales)
- The mobilisation of sub-national regions as political territories in a multi-scaled governance environment
- Identity driven (re-)emergence of some regions (e.g. Scottish devolution and nationalism)

Regions may therefore emerge, broadly speaking, for two reasons (MacLeod and Jones 2007: 1181):

1. Politico-administrative action, which seeks to restructure existing political and administrative landscape to address challenges such as the difficulty of state intervention in economic activity at the national scale, or pressure from regional movements. Examples include the rise of devolved administrations and of imposition of Regional Development Agencies by central government.
2. Economic developments, where regional convergence of firms into clusters is driven by the benefits of doing so such as sharing the costs of

infrastructure and 'untraded interdependences' which can't be traded but are essential to business and are rooted in relational networks between firms (Amin 1999: 369). Examples include the emergence of regions such as Silicon Valley in the USA.

While interest in regions as sites for economic intervention can be a further development of advantage seeking capitalism (i.e. aiding clustering) it could also be interpreted as the failure of the state to evenly manage economic development and a way of normalising unequal growth (Brenner 2003: 306).

The contribution regionalism brings is in seeing the regional scale not as a given, but as an emergent category; something which has to be made and is as such an "inherently political act" which forces us to consider "*whose* region is actually being constructed" (Söderbaum 2003: 7). In the context of a political environment in which the state is not the only actor, there may be competing regionalisms emerging from a complex milieu of competing actors (Söderbaum 2003: 8). In regions which are "institutionally thin" in particular, governance has been dominated by "elite coalitions" which rather than seeking to unlock new routes to development, build on reinforcing existing dominant interests and eschew "new institutional practices" which might widen participation in local decision making and regional development (Amin 1999: 373). Thus as a discourse and practice regionalism may be "instrumentally attractive to powerful interests" (Lovering 1999: 392).

The regionalism approach helps explore how the rescaling of economic activity and governance is enacted in practice, by whom and to what end in a multilevel world. One of the realities of regionalism, particularly in the UK, is the remaining role of central government. Localism in the UK is an "uneasy

relationship between centralised powers, conditional decentralisation and fragmented localism" where central government constrains the freedoms of local areas to "undertake innovative actions" (Bentley and Pugalis 2013: 257). Therefore in practice localism involves negotiation with the central state in many cases to be allowed to undertake actions deemed locally necessary.

2.9 – Post-politics (and nuclear planning)

The "democratic character of the political sphere is increasingly eroded" (Swyngedouw 2005: 1993) by the replacement of 'dissensus' with 'consensus' driven politics based upon the dominant, neo-liberal accumulation strategy (Swyngedouw 2010: 38). Rather than beginning with disagreement on ideology, problems or issues, politics is reduced to settling the detail of solutions to commonly agreed challenges and thus becomes managerial and technocratic (Žižek 1999: 236). This is achieved through appeal to "comfort terms" which mean "everything and nothing" (Gunder and Hillier 2009: 1 in Johnstone 2014: 702). Sustainable development is a key example of such a term where scientific evidence and expertise is employed to take the issue beyond dispute with the result being a politics confined to solutions rather than challenging their underlying or overarching basis, such that for sustainable development the solutions are aimed at finding ways to continue the conspicuous consumption of neo-liberal capitalism rather than questioning whether that is in fact the cause of the problem which apparently needs to be addressed (Swyngedouw 2007: 27).

Achieving the post-political condition requires action to prevent debate. In land use planning this has been achieved through rescaling the opportunities for debate through the abolition of planning enquiries and their replacement with

consultation at national and local levels (Johnstone 2014). In the case of nuclear power and other projects designated as 'Major Infrastructure Projects' under the provisions of the Planning Act (2008), the practical outcome of the separation of consultation on the need for such infrastructure and the implications of their construction to national and local scales respectively is to prevent issues 'scale jumping' (MacKinnon 2011: 24). Under the old system of planning inquiries national and local issues could coalesce and combine to form 'subversive coalitions' and shift the scalar politics of the issue, whereas now national and local campaigns and issues never meet and are strictly limited by the terms and timings of the consultation (Johnstone 2014: 704).

In West Cumbria, debate around new nuclear power stations at three sites did lead to the rejection of two of them, but in opposing those two sites at public meetings the majority of those speaking in opposition still supported nuclear power in the area, albeit at only one site adjacent to Sellafield (Haraldsen et al 2011). This argument on the specifics of what to site and where does not demonstrate the return of politics to the issue. It is exemplary of the 'displacement of politics' which leads to the post-political condition, where questioning of the overarching issue new nuclear was framed as addressing was long since passed in previous consultations at the national level and the only option left was for the return of politics "via other channels of engagement" such as legal challenge and direct action (Johnstone 2014: 698).

2.10 – Theoretical framework

The thesis explores the political, social and economic implications of state restructuring, using the nuclear industry in West Cumbria as the case-study.

The key concepts, introduced earlier, are power and scale. The exploration of power demonstrated that it is much more than just state capabilities or resources, it is a result of how those bases of power are applied in specific settings. The recognition of the importance of geography to any consideration of power reveals the importance of the issue of scale, particularly in the wider context of the restructuring of the state, which has moved from the gardening, paternalistic, interventionist nation state, to one in which policy aims are achieved by less direct provision. The consequence of this has been that to understand how power is used in an applied way, we need to do that in full understanding of the wider conception of governance which involves a much broader range of actors from public, private and social sectors and a range of policy tools operating at a much more diverse set of scales. The relationship between state, industry and region, and how each affects the other in the control over space and the impact that has is therefore what this thesis is seeking to analyse.

Following on from that exploration of scale and power, and the several approaches to exploring elements of the scaling and rescaling of power covered in this chapter, it is necessary to bring these all together in one framework for the thesis. The theories and approaches each shed light on different aspects of the scaling and rescaling of power in contemporary society. The core of the issue is that the state has been restructured, and continues to restructure, but that rather than this being either placeless or accidental, it occurs in a multitude of different ways in a multitude of different places as a consequence of the actions of various actors with a range of interests. This requires the application of a range of approaches to specific instances of restructuring, as in this thesis

to the issue of state restructuring in the nuclear industry and the effects on West Cumbria.
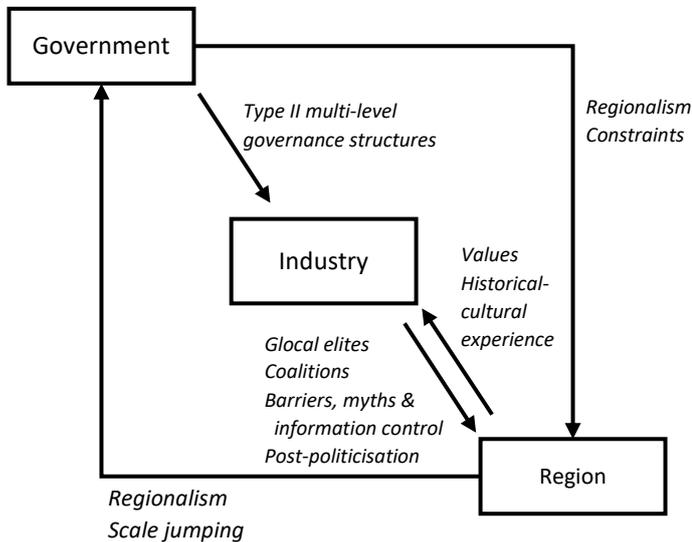
Figure 2.1 – Theoretical framework

As Brenner (2001; 2008; 2009) argues and as discussed earlier in this chapter, to understand the scaling of power requires an investigation of the transformation from one scaling to another, to reveal the competing interests which underlie the temporary fixes which constitute any particular scalar arrangement. The transformation of state structures as part of the wider shift to a neoliberal economic order as the dominant accumulation strategy (Jessop 1997: 61-62; Swyngedouw 2010: 38) did not happen by accident nor was it placeless, but required actions (Sassen 2008) in specific places (Allen 2003). This transformation leads to many 'public service industries' and new structures specific to certain policy functions, employing a range of different 'tools of government' to attempt to meet policy objectives (Hood 1983; Hood 1986; Hood and Margetts 2007).

The rescaling of the elements of the state is both demanded by, and enables, the networked rescaling of economic activity. This is itself, as explored earlier, enabled by technology which has overcome to an extent the barrier of geographical distance to economic activity and therefore opened up sub-national places to a wider array of industrial interests than previously the case. Capital can go 'venue shopping' for the most favourable local conditions and therefore the highest returns on investment across most of the globe (Swyngedouw 2004: 40-41). In the context of state withdrawal from detailed economic planning sub-national regions have to compete for economic activity, based on exploiting their unique assets and characteristics (Swyngedouw 1989; 1996; 2004). The other side of this freedom, or burden, is that areas are also subject to a wider array of actors from distant places with diverse personal and corporate interests to serve, perhaps in positions of control over significant resources. These are the 'glocal elites' (Swyngedouw and Baeten 2001: 827; Swyngedouw 2004: 38).

The restructuring of the state which has led to a proliferation of scales of regulation and of the actors involved in governing has introduced a much greater range of interests, geographical, industrial, and personal, into the process and practice of governance. The increased salience of sub-national places, which are charged increasingly with securing their own economic prosperity in the absence of the national state planning the economic activity within its borders, has also increased the range of opportunities for these interests to shape the lives of people and communities. However, in any given economic order, there are those who will benefit and those who will lose out. The ability to imagine and shape local economic conditions and establish new regulatory structures at favourable scales – in short undertake the 'visioneering'

(Paul 2005) of the future of regions – requires consent, or the lack of successful dissent.

The visions which drive economic intervention and new structures of regulation are built around hegemonic projects, deeply rooted in local conditions, within constraints of a multi-level polity, which are negotiated and contested. These 'hegemonic projects' are the vehicle around which support can be galvanised for a certain set of actions and a future direction "that asserts a contingent general interest in the pursuit of objectives that explicitly or implicitly advance the long-term interests of the hegemonic class (fraction) and thereby privileges particular economic-corporate interests compatible with this program while derogating the pursuit of other interests that are inconsistent with the project" (Jessop 1997: 62). Paul (2005) argues that social support for the hegemonic project, which is inherently unequal, requires the stressing of shared cultural and ideological beliefs.   The pursuit of already dominant economic and political interests leads to "the systematic exclusion or further disempowerment of politically and/or economically already weaker social groups" (Swyngedouw 1996: 1499). In an effort to overcome the opposition from such groups, issues are ideally rendered 'post-political', and taken out of contestation all together through endless consultation, the privileging of expert opinion and other barriers to entry into debate (Johnstone 2010; Swyngedouw 2014).

However, while the local conditions of economic development and governance have been granted more salience by the withdrawal of the state from these areas of planning, that is not to say the state has completely diminished in its ability or power to act in sub-national places or policy areas. The freedom to 'visioneer' is not total, particularly in the UK. Freedoms are granted by government, which does not do so for all policy areas, as experience of

'localism' in the UK has demonstrated (Baker 2015: 250-251). Thus, power remains something to be imposed, withdrawn, negotiated and contested from above and below by various groups; it is varied by its geography (Allen 2003). The state, industrial actors and regions thus all interact with each other at a variety of levels to each seek to advance their particular interests and maintain or gain control over space. This has economic, political and social implications at a range of scales.

2.11 - Conclusion

This chapter has developed practical approaches to understanding an applied interpretation of power in its various forms, bases and uses; particularly legitimate authority, economic power and domination. In understanding the application of power, there are three separate issues of location, content (enactment, for whom by whom) and outcomes when considering power and its use. They are related issues, such that the location of power is intrinsically linked with the aims and both influence the outcomes, for example. The various approaches to theorising and exploring power in this chapter offer perspectives on these three issues. In all cases what is being explored is the attempt at exercising control over space and the outcomes that may have for the wider public. With regards to the location of power, multi-level governance, regionalism, glocalisation and scalar politics share a focus on spatiality, although the dimension, structuring principles and resultant patterning of social relations differ (Jessop et al 2008: 393). It is in this difference that they can become complementary approaches for the exploration of the complex issue of the rescaling of power in west Cumbria and the role of the nuclear industry. Location is, though, only one aspect of power. Identifying how power is

rescaled is important, but it is enriched by, and can require, understanding the

interests of actors involved (Cox 2013: 55). This means not just understanding

what the holder of power would aim to achieve in its exercise, but also

understanding the conditions which need to be maintained or created for the

successful exercise of power for those holding or seeking it.

CHAPTER 3 –THE NUCLEAR INDUSTRY AND WEST CUMBRIA

3.1 – Introduction

This chapter provides context for this thesis in three key areas. Firstly, the development of the nuclear industry in the UK will be explored, from the atomic weapons programme in the 1940s to the withdrawal of the state in the 1990s. Secondly, and more specifically, the twin development of West Cumbria as both central to, and dominated by, the UK nuclear industry is examined. Thirdly, the chapter explores the effects of this domination on the general social, political and economic context of west Cumbria.

3.2 – The history and context of the nuclear industry

3.2.1 – The development of the military and civil nuclear industry

This section explores the development of the nuclear industry in the UK, including the wider international drivers. The section describes the origins of the nuclear industry, the major expansions and changes since the 1940s, and highlights the long shadow which the original military impetus for the development of the industry has cast over its behaviours and actions for many years.

	Phase 1	Phase 2	Phase 3
	• Development of atomic weapons • Innovative use of this technology to generate electricity • Strategic national interests shaping a new industry and major UK research organisation • Development of a nationalised electricity supply industry (ESI) • Development of an organisation to manage the nuclear fuel cycle, British Nuclear Fuels (BNFL)	• New government policies see the privatisation of nationalised industries and marketisation of the public sector • ESI broken up and sold off where possible • PWR and AGRs allocated to a new company, British Energy subsequently sold off • Policy leaves residual nuclear organisations in the public sector • Nuclear incidents and the increasing costs of UK nuclear industry effectively mean further investment is unlikely.	• A different approach becomes evident to the management of the publicly owned elements of the nuclear industry. • The approach is based on the concept of partnership with the private sector • A new NDPB inherits the Legacy assets and liabilities, the Nuclear Decommissioning Authority (NDA).

Table 3.1 - Summary of the Legacy's three phases and key events (Pemberton 2014: 6)

The origins of the global nuclear industry lie in the military imperative for atomic weapons. In the UK, work began on an atomic bomb in 1941, before being subsumed into the much larger allied joint venture, the Manhattan project (MoD 2005: 1). Following the Second World War, which saw the deployment of two atomic weapons against the Japanese population, the American government published the Atomic Energy Act 1946 which significantly reorganised the US atomic industry including, amid fears for the proliferation of atomic weapons, provisions preventing the sharing of atomic intelligence, even with close allies such as the British (MoD 2005: 1). As a result, the British government had to develop its own weapons programme and technologies from scratch. This

required a range of facilities, technologies and materials, the most important of which was the production of the fissile material, plutonium.

The development of the UK's independent nuclear deterrent required three principal sites, for research, production and assembly. The research was based at Harwell in Oxfordshire, the production of plutonium was based in Cumbria at Windscale and the assembly of weapons was at Aldermaston in Berkshire (see map 3.1). The development was led by the Ministry of Supply, which established the Atomic Weapons Research Establishment (AWRE) in 1950. The structure changed in 1954, with responsibility for the development of nuclear technologies moving from the Ministry of Supply to the United Kingdom Atomic Energy Authority (UKAEA). The UKAEA was "semi-autonomous" and in contrast to the structure in the United States, which separated civilian and military elements of the atomic industry, the UKAEA was charged with the delivery of both military and civil nuclear projects (Hance 2006: 125). The weapons programme placed a high demand upon the technology available.

While the UK's original Windscale pile reactors were probably capable of providing enough plutonium for about "a hundred bombs by 1957", pressure was placed by the Chiefs of Staff for double that (Durie and Edwards 1982: 18). It was clear that a new technology was required. The replacements for the initial pile reactors were another British design. The first of the new MAGNOX reactors were constructed approximately one-mile south of the initial Windscale piles at Calder Hall, and were opened by Her Majesty the Queen in 1956. These were the first reactors in the world to supply commercial electricity. However, particularly for the initial two sites at Calder Hall and Chapelcross, the design of the MAGNOX reactor was specifically intended to be "of interest to those intending weapons manufacture" (Gallacher 1983: 227). The fleet of

MAGNOX reactors spread eventually to include eleven stations at sites across England, Scotland and Wales. The later stations were more productive. The last MAGNOX station constructed at Wylfa, on Anglesey in North Wales, has 10 times the electrical output of those at Chapelcross, opened 15 years earlier. However, despite an outward appearance of civilian application in the commercial production of electricity, the legacy of a military origin cast its shadow over the operation and behaviour of the industry going forward, where operations were considered secret until formally declassified (Cravens 2008: xiii).
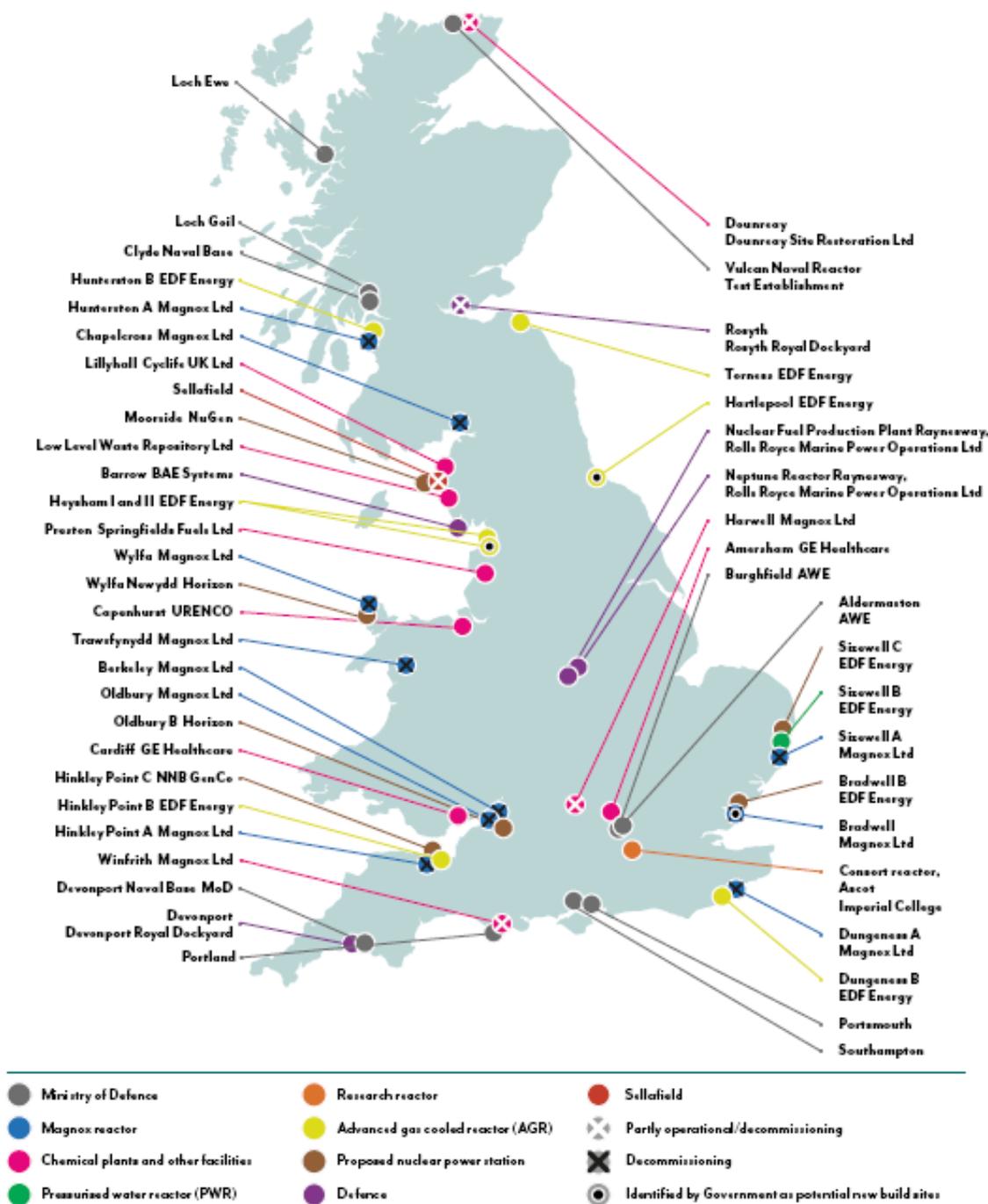
Map 3.1 – Map of UK nuclear sites

The second generation of reactors in the UK, the Advanced Gas Cooled

Reactor (AGR), followed the MAGNOX fleet and ultimately resulted /in seven

twin reactor sites at six locations around England and Scotland (EDF 2016).

The development of this fleet was different from the MAGNOX fleet in many ways. The AGR itself from a technical standpoint was another gas-cooled reactor, in contrast to the American use of pressurised water reactors. In this second round of power reactor development the choice of reactor was between the AGR and the PWR, where the developer of the AGR design was also the reviewer of the designs for government, the UKAEA. This slight conflict of interest led the government to favour the AGR, a decision which was "the greatest misallocation of public funds in British industrial history" as not one of the reactors ever lived up to the anticipated performance (Durie and Edwards 1982: 28).

Despite the difficulties in expanding the power generating fleet, expand it did, which had further implications for operations relating to the nuclear fuel-cycle. In 1967 the House of Commons Select Committee on Science and Technology recommended a separate fuel cycle organisation to service the growing domestic and international demand for nuclear fuels. The Atomic Energy Act 1971 vested a new organisation, British Nuclear Fuels Ltd (BNFL), with the fuel services elements of the UKAEA. BNFL took on the entire nuclear fuel cycle services, becoming the sole customer for fuel and reprocessing for the entire UK nuclear fleet. The power stations themselves were operated by the nationalised Central Electricity Generating Board (until the 1990s) with the exception of Calder Hall (in Cumbria) and Chapelcross (in Dumfries and Galloway), just over the Scottish border, which were the two original dual-purpose MAGNOX reactor sites involved with the production of plutonium and tritium for the nuclear weapons programme. BNFL took on uranium enrichment at Capenhurst in Cheshire, nuclear fuel manufacturing at Springfields near Preston in Lancashire and the Magnox fuel reprocessing and waste

management facilities at Windscale in west Cumbria. The civil nuclear industry in the UK from 1971 comprised four large nationalised companies: the UKAEA conducting research, BNFL handling fuel manufacture and reprocessing, the CEGB owning and operating English and Welsh power stations and the SSEB (Scottish and Southern Electricity Board) doing the same for Scotland. This remained the stable arrangement for nearly twenty years. However, there was by no means a lack of developments, or planned developments, in the industry during that time.

Although the composition of the industry became stable after the establishment of BNFL, this was manifestly not the case for the wider political situation, particularly with regards to energy. The 1970s saw trades' union militancy at home, particularly from the coal miners, and political pressure from oil exporting countries of the Middle East. In the 1970s the uranium supply was, wrongly, thought to be scarce (Word Nuclear Association 2017). These events combined to make greater domestic energy security in the UK more attractive, and the nuclear industry provided some options.

These wider events, coupled with an accident in the B204 facility at Windscale, made BNFL (Blowers et al 1991: 56), made BNFL draw up plans for a new facility to reprocess oxide fuels from the second generation reactors in the UK and overseas. BNFL submitted plans to that effect in 1977 which were granted permission in 1978 (Wynne 1982 [2011]). Construction of the Thermal Oxide Reprocessing Plant (THORP) was begun in 1984 and fuel from British and foreign reactors was reprocessed from 1994 onwards (Sellafield Ltd 2016a: 10-11). BNFL built the economic case for the plant upon international contracts, however by the time the plant was operational in 1994 the case had altered radically, such that "one of Britain's largest industrial facilities was being turned

on to provide plutonium which was no longer needed or wanted [and] whose …

operation would be funded through surcharges and taxes on electricity

consumers and publics in the UK and especially in Japan and Germany"

(Walker 1999: 113-114).

At the same time as the expansion of reprocessing in the UK, there were plans

for the expansion of power generation in the UK. In 1981 the Government

published a White Paper, "Nuclear Power: The Government's response to the

Select Committee for Energy's review of nuclear power", which called for an

additional 15GW of nuclear generating capacity. Ultimately, however, only one

reactor was built, Sizewell B. This reactor, however, was unique in the UK not

only for being the first, and so far only, Pressurised Water Reactor (PWR) in the

UK, but for the public inquiry which examined the proposal. This right of public

participation was not something which had been granted to previous

expansions of nuclear power in the UK, and it became one of the longest public

inquiries in British history, from 11th January 1983 to 7th March 1985, with a total

of 340 working days (Blowers and Pepper 1987: 85). As will be seen later, this

was not the last time that public opinion would play a role in shaping the actions

of an industry which still felt the effects of its military and secretive origins.

This point, starting in the 1980s, is where the transition from the first to second

phase occurs. At the same time as the industry was reaching the last of its

major expansions in the mid-1980s with the construction on THORP and the

last new reactor in the UK at Sizewell B, the nuclear generation capacity was

subject to an attempted privatisation. In 1988 the White Paper 'Privatising

Electricity' was published. The Electricity Bill in November of the same year laid

out the legal basis for privatisation of the electricity industry. After the 1988

White Paper had proposed that the nuclear fleet – owned by Nuclear Electric

Ltd and Scottish Nuclear Ltd – be privatised, concerns for the cost of decommissioning, waste management and the generally favourable cost of coal, oil and gas generation by comparison at the time prevented this taking place. Government overcame this problem in the 1990s, by privatising the more modern AGR and PWR reactors as British Energy and the first generation fleet remained state owned as Magnox Electric, later transferred to BNFL (HoC Research Paper 14/61 2014: 10).

The nuclear industry, and BNFL in particular in the UK, were at their largest size in the 1990s which was also the nadir of potential future developments for the wider industry, particularly for the prospects for new power generation across the globe (Nuttall 2004: 2). This is the transition from the second to the third 'phase' which Pemberton refers to (Pemberton 2014: 6) where what could be privatised had been and the state was managing the rest. In the early 2000s a significant shift in policy towards the remaining state nuclear assets occurred, to bring their management more closely in line with the privatisation of other state industries, and their operation moved to being contracted out with an end to direct state provision where possible (Nuttall 2004: 3).

The move towards private sector management and accounting in the early 2000s for the nuclear industry reflected a well-known approach to public service reform following the mass privatisations of state owned companies in the 1980s by the Conservative governments of Margaret Thatcher and then continuing under the governments of John Major. However, as described, the nuclear industry did not have a straightforward path to the private sector. After the privatisation of the AGR and PWR reactors, the remaining legacy, mostly BNFL, joined this 'third phase' in the 2000s. Changes to the management of the state owned elements of the nuclear legacy, aimed at bringing in the private sector

and involving major structural change to the governance of the publicly owned industry, began in 2002 with the government publishing a White Paper, 'Dealing with the Nuclear Legacy'' (DTI 2002). This led to the establishment of a new non-departmental public body (NDPB), the Liabilities Management Authority (LMA) that became the Nuclear Decommissioning Authority (NDA) following the Energy Act 2004. This body owns the assets, sets the strategy for their operation, and has responsibility for contracting out the management of the sites.   The key relationships for the various bodies in this governance structure are outlined below, using the example of Low Level Waste Repository site in Cumbria, which was the first site to be contracted out:
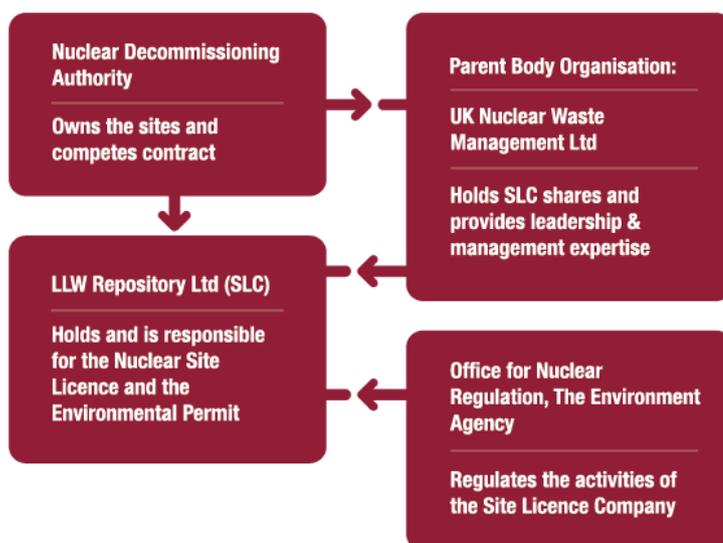
Figure 3.1 – Example of the Nuclear Decommissioning Authority/Parent Body Organisation/Site Licence Company relationship (for the national Low Level Waste Repository).

The original timeline for contracting out of the management of the state owned nuclear liabilities was to begin with the smallest site, the Low Level Waste Repository (LLRW) and end with the largest and most complex, Sellafield (NDA 2006). A change in strategy by BNFL forced this plan to be modified, with Sellafield becoming the second site tendered by the NDA (NDA 2007: 32). Ultimately, all the sites were grouped into a smaller number of separate

companies, initially comprising the research sites (Harwell and Winfrith), the Magnox sites across the UK and Scotland, Dounreay, Sellafield and LLWR. On the 1st April 2015, Research Sites Restoration Limited and Magnox Limited merged to form one company after Cavendish Fluor Partnership became the new Parent Body Organisation for both companies in 2014.

Thus, in 2015, there were four main Site Licence Companies and Parent Body Organisations:

- Sellafield Ltd, owned by Nucelar Management Partners, a consortium of URS, Amec and Arriva.
- Dounreay Site Restoration Ltd, owned by the Cavendish Dounreay Partnership, a consortium of Cavendish Nuclear, a subsidiary of Babcock International, CH2M and AECOM.
- Magnox Ltd, owned by the Cavendish Fluor Partnership, a joint venture between Cavendish Nuclear, a subsidiary of Babcock International, and the Fluor Inc.
- Low Level Waste Repository Ltd, owned by UK Nuclear Waste Management, a consortium of AECOM, Studsvik UK and Areva.

The failure of the tender process for Magnox Ltd in 2017 has led to the NDA considering a replacement contracting structure and direct costs in settlements to the failed bidders from 2012 of approximately £12.5 million (WNN 2017). This may result in a direct ownership of the site, as has happened for Sellafield after that contract failed. The implications of the failure of the Parent Body Organisation model are analysed in detail in chapter 5 in relation to Sellafield Ltd for the Nuclear Management Partners contract and subsequent direct ownership by the NDA.

As old sites were engrossed in decommissioning, and over thirty years since the last decision was taken to build a new nuclear reactor in the UK, in 2008 the government signalled its support for a new generation of nuclear reactors (DTi 2008). This new policy was very different in some ways, but also remained similar in others, to what had come before. Under the current policy, the capital costs of construction of any new plant are the responsibility of the developer. However, recognising that the capital costs are high, the government subsidises the electricity produced, by guaranteeing a minimum price for a certain number of years. The minimum price, called the 'strike price', becomes the 'contract for difference' when taken with the duration of the contract and other specifics (DECC 2015). Under this arrangement, the government agrees to guarantee a minimum price for the electricity produced, and pays the supplier the difference when the wholesale price falls below that level, and conversely when the wholesale price is higher than the strike price, the government receives the difference. Thus, in one way the current policy is a very different approach from the past, as in this case government is not directly financing the capital costs of construction. On the other hand, the state is still guaranteeing the whole scheme out of ongoing revenue budgets for the 30 years following the plant becoming operational. The movement of the burden on the state from one-off capital construction to long-term revenue support is a significant change, but it reflects the fact that the state remains in a unique position with considerable authority and involvement in the energy market. This is in line with the broader shift in the role of the state, from one of direct provision of services to that of a guarantor and commissioner, explored in the previous chapter and applied in relation to the specific west Cumbrian context later in chapter 5.

3.2.2 – The Achilles heel: Radioactive Waste

The nuclear industry creates wastes, like most if not all industrial activity. Much of this waste is again, like for any activity, essentially municipal waste requiring no treatment different to household wastes. However, the industry also produces wastes that require special treatment and are to varying degrees hazardous for varying lengths of time. Radioactive waste is particularly important to the nuclear industry, as it has been for a long time the unresolved element that could impede development of new reactors and other facilities. In the mid-1970s, a Royal Commission on Environmental Pollution looking at the topic of new nuclear power stated:

> *"…it would be irresponsible and morally wrong to commit future generations to the consequences of fission power on a massive scale unless it has been demonstrated beyond reasonable doubt that at least one method exists for the safe isolation of these wastes for the indefinite future." (RECP 1976: 81)*

Following this report in 1976, AGR reactors continued to open and new reactors have been planned at various points since. As a result of the increasing pressure to deal with the growing volume of waste, combined with these repeated governmental initiatives to expand the nuclear industry, there have been a number of attempts to find that method for disposing of radioactive waste in the very long term. This applies to some forms of radioactive wastes more than it does to others. For some types of waste, the least radioactive, disposal methods and sites do exist but for others there is no accepted method of long-term disposal. Very broadly, there are three classifications for radioactive waste (Hore-Lacy 2006: 78-79):

- Low level wastes come from a variety of sources, including hospitals, universities and wider industry, including nuclear, and require little special attention forming only 1% of the total radioactivity but 90% of the volume of all radioactive wastes

- Intermediate level wastes are primarily from the nuclear industry and do require special shielding such as concrete to protect people and the environment. These usually arise either as by-products of operation, or during decommissioning, for example as contaminated used components. They make up make up approximately 7% of the volume and 4% of the radioactivity of all wastes.

- High level, or higher activity, radioactive wastes are those that generate heat, such as used fuel or reprocessing by-products, and while only accounting for 3% of the volume, these make up 95% of the radioactivity of all radioactive wastes.

The choice of whether or not to reprocess fuel has a direct impact on the waste problem. While used fuel elements are high level wastes, for oxide fuels they can be stored for long periods, whereas the liquid high-level waste from reprocessing wastes has to be further treated through processes like vitrification into glass blocks and then cooled for many years (Hore-Lacy 2006 79-81). This requires further plants and processes that generate further volumes of intermediate and low level wastes when they operate and are decommissioned.

Given the UK has since 1976 built more reactors, more reprocessing plants, and new fuel manufacturing facilities, it has continued to generate more and more waste. Consequently, there have been repeated attempts to find a site to bury intermediate level wastes in the 1970s, 1980s and 1990s, and both

intermediate and high level wastes in the 2000s and 2010s. It is not necessary to explore every attempt to find a site, but instead simply contrast the key elements of the most recent policies with approaches taken in the 1980s and 1990s.

The approach taken from the mid-1980s to the mid-1990s by an organisation called NIREX (the Nuclear Industry Radioactive Waste Executive) was to initially cast a net across the UK to find the most suitable site on technical and geological criteria, but ended up seeking permission to construct an underground Rock Characterisation Facility in Cumbria very close to Sellafield. This strategy adopted by NIREX was later reviewed by the International Atomic Energy Agency (IAEA 2007), which found many shortcomings: they judged that it

- Was not transparent
- Was not developed in consultation with all interested and affected parties
- Did not have clear decision points
- Did not explain how decisions had been taken
- Did not provide opportunities for interested and affected parties to provide inputs.

The approach was very reminiscent of the general approach taken by the industry to siting of facilities from its early development and military origins, where, as explored earlier, information was considered secret unless very specifically designated otherwise. The lack of openness and transparency were fatal for NIREX, which never succeeded in finding a site for intermediate level wastes.

In 2001, the government began a four-stage process to develop a new policy for the long-term management of the 'higher-activity' intermediate and high-level radioactive wastes. From 2001-2002, stage one looked to define the scope of the problem and how stakeholders wanted to be engaged. Stage two, from 2002 to 2006, saw government establish the independent 'Committee on Radioactive Waste Management' (CoRWM) which considered all potential long-term waste management options and screened them with public involvement, eventually settling on deep geological disposal. During stage three, from 2006 to 2007, the UK Government consulted on the framework for implementing geological disposal in the UK, at which point the Scottish government withdrew and stated a preference for near site, near surface disposal instead of one central, deep disposal site. Finally, government consulted on that framework and published the 'Managing Radioactive Waste Safely' White Paper in 2008. It is clear here that there is a significant shift towards greater public consultation than was ever the case in the history of the industry. However, this is a complex issue and is analysed in detail in chapter 5.

3.3 - West Cumbria

3.3.1 – The home of the UK nuclear industry

The research underpinning the first UK atomic weapon may have come from Harwell, but West Cumbria was and remains the home of the nuclear *industry*. In the 70 years that the UK has had an atomic industry almost all developments have involved or impacted West Cumbria. The nuclear industry has come to dominate West Cumbria, particularly economically but also socially and culturally (Wynne et al 2007). This section will describe the specific nuclear developments in West Cumbria, before moving on to the a wider examination of the characteristics of the area, to demonstrate how West Cumbria relies on the nuclear industry, and how the nuclear industry in turn relies on West Cumbria.

The atomic weapons programme required plutonium, and it is for this purpose that West Cumbria became involved in the atomic weapons programme. This was one of the three key activities, alongside research and weapons manufacture. The first activity was built at Windscale in West Cumbria and the other two at Harwell in Oxfordshire and Aldermaston in Berkshire respectively. Windscale, which had been a Royal Ordinance Factory during the war, became the site for the UKs first atomic reactors, Pile 1 and Pile 2, and associated reprocessing facilities. These reactors produced the plutonium for the first British atomic weapon, which was detonated on 3rd October 1952 in Australia. In the following years, demand for fissile material increased as the United States and the Soviet Union advanced their atomic weapons programmes into the thermonuclear age. This demand in the UK was to lead, on 10 October 1957, to the Pile 1 reactor catching fire and becoming the only significant nuclear accident in the UK, and the most significant nuclear accident in the

world until the Three Mile Island partial meltdown in the United States in 1979 (Sellafield Ltd 2013).

At the time of the Windscale accident, the first four MAGNOX reactors were being constructed nearby at Calder Hall. These were the first atomic power stations to supply commercial electricity in the world, but this was only one-half of their dual purpose, which was to provide plutonium and tritium (much more efficiently than the Windscale piles) to meet the military demand for weapons in the context of a Cold War arms race. Once again, West Cumbria became the home of the manufacturing elements of the nuclear industry, but in addition the region was playing a role in the geo-politics of the mid-20th century.

Up to this point the nuclear industry remained, despite providing electricity from Calder Hall, a very military affair. Pile reactors, reprocessing facilities and even these new dual-purpose reactors were all serving an atomic weapons programme. While the Magnox fleet expanded for commercial production of electricity elsewhere in the country, it was not until the 1960s that this commercially focussed industry came to Windscale. The prototype for the second-generation reactors, built at Windscale in West Cumbria, provided electricity from 1963 until 1981, but on a much smaller scale than the reactors in the later fleet (Collingridge 1984: 58).

The expansion of the commercial Magnox fleet created a problem. As a result of the intended purpose of the prototype, to provide plutonium for the atomic weapons programme via reprocessing, the fuel they use is clad in a magnesium oxide alloy (hence the name) which was never designed to be stored, and corrodes when left in contact with water. Additional reprocessing facilities were needed to deal with the increased demand and B205 was constructed in West

Cumbria in 1964 as the world's first commercial nuclear fuel reprocessing plant (Sellafield Ltd 2004).

Following the construction of the AGR prototype and the B205 facility, the Windscale site settled into a steady operation during the 1960s and 1970s. However, just as the expansion of the Magnox fleet created a problem for the reprocessing of their fuels, so too did the expansion of the oxide-fuelled AGR reactor fleet as detailed in the earlier section. The eventual construction of the THORP plant at Windscale in the 1980s was a massive civil engineering project, especially striking in its impact in the context of an isolated area experiencing a decline in traditional industries.

It was at this point, in the 1980s, that the site changed its name. The site became Sellafield in 1981. This was the first of a number of changes in the 1980s in the way the site presented itself to, and dealt with, the community around it. The need to do so was reinforced by two major incidents in 1983. One was the allegation, made in a Yorkshire Television Documentary '*Windscale – The Nuclear Laundry'* broadcast on 1st November 1983, that there was a link between the Sellafield site and clusters of childhood leukaemia in the local population as a result of radioactive discharges to the air. The second incident was the closure of local beaches from St Bees in the north to Eskmeals in the south (approximately 10 miles) for nine months as a result of an accidental discharge of radioactive effluent into the Irish Sea (CORE 2013). Notices were posted and the public advised not to swim in the sea or handle materials which had been washed up (HC Deb 22 December 1983, c343-4W). The incidents led to the Government replacing the Chairman of BNFL with Christopher Harding, who transformed the site's approach to the public with the

opening of a visitor's centre and a general tendency to openness which contrasted with the prior history of the industry.

As has been demonstrated in the previous section, the 1990s were a high point of nuclear activity, particularly at Sellafield with reprocessing and fuel manufacture expanding. It was also, as mentioned earlier, at this time that the future prospects for the nuclear industry both nationally and globally were at their lowest.

The last major capital expansion of the UK nuclear industry took place in Cumbria. The first MOX facility in the UK was a small demonstration plant at Sellafield which produced fuel from 1994 to 1999, until it was revealed workers had falsified measurement records for fuel pellets and orders were cancelled (ONR 2016b). A full scale commercial facility at Sellafield, which BNFL completed in 1997, operated until orders ceased as a result of the Fukushima tsunami in Japan, upon which the Japanese government closed their reactor fleet. However, the Sellafield MOX Plant (SMP) only produced less than 14 tonnes in a decade compared to the 120 tonnes per year predicted by BNFL, at a cost of £1.4 billion compared to an estimated £280 million in 1993 (Brady 2013). The further implication of this, aside from the cost to the taxpayer and the further expansion of Sellafield, is that the MOX option was in part justified as a way of dealing with the world's largest civil stockpile of plutonium (at Sellafield) which was a recognised international proliferation risk (Walker 1999: 113), and still has no settled option for its future use or disposal (NDA 2014: 3).

The two major expansions in Cumbria in the 1980s and 1990s, THORP and MOX, were as we have seen, justified partly on their relationship to the status of spent fuel. The UK government saw spent fuel as an asset for re-use.

However, as shown earlier this never went as planned. The result is that the industry's problem with radioactive waste is a problem which is physically located in West Cumbria. 72.2% of radioactive waste is the result of spent fuel reprocessing, all of which has been generated and is stored in West Cumbria (NDA 2013: 8). While by volume the majority of waste is not particularly radioactive, and that gets disposed of at the national Low Level Wat Repository in West Cumbria, the high level radioactive wastes which account for only 0.02% by volume account for 95% of the radioactivity of all wastes, and all of this is at Sellafield (NDA 2013: 11). Overall, the majority of the radioactive waste by radioactivity is therefore in west Cumbria, along with a significant proportion of the intermediate level wastes which have been generated or will be as decommissioning of old facilities continues, and the national repository for low level wastes is in the area. West Cumbria is, depending on your perspective, a centre of excellence in the handling of radioactive wastes or the UK's radioactive waste dump, something which will be returned to in chapter seven in relation to the most recent processes for attempting to find a site for underground disposal.

This section has sought to outline the expansion of the nuclear industry over the course of sixty years. In specific relation to West Cumbria, it has narrated the developments whereby Sellafield came to employ so many people in West Cumbria. This section has also attempted to underscore the extent to which West Cumbria has been central to the military and civil nuclear industry since its very inception in the UK. Finally, it has given the necessary context of the scale and complexity of the nuclear industry in the area, which is important to frame the analysis in later chapters.
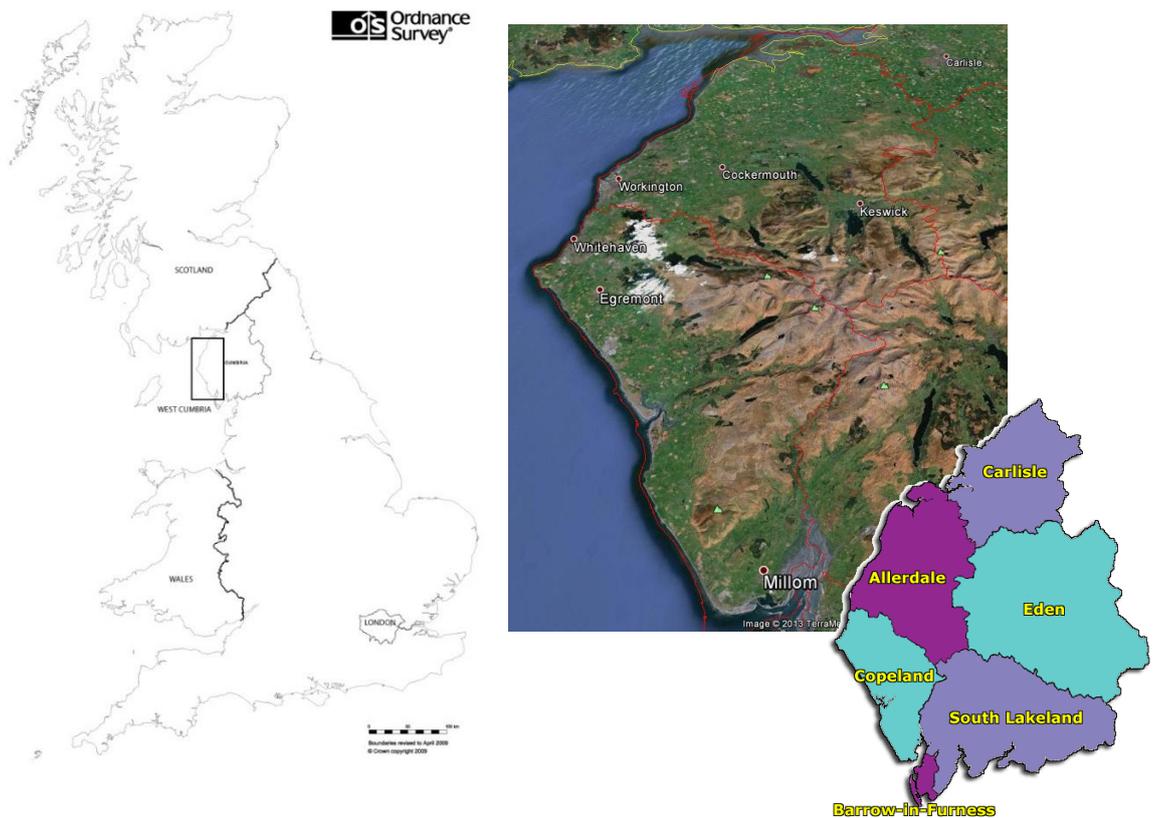
Map 3.2 – Location and physical and administrative geography of West Cumbria

West Cumbria is not itself an official administrative area, such as a town, borough or county, rather it is the geographical area covered by the Allerdale and Copeland Borough Councils on the Western side of Cumbria in the north-west of England. These two boroughs share a number of common characteristics in their physical and economic geographies, history and culture. The area is isolated, made remote by its physical geography which is bounded by the coast to the west and the Lake District fells to the east. These two characteristics make challenging terrain for transport links.   As a result the major towns in West Cumbria are approximately an hour by car or train from a motorway or mainline railway. The nearest large cities, such as Newcastle in

the north east of England or Manchester in the north west are at least two to three hours travel, on a good day.

The two local authorities, Allerdale and Copeland Borough Councils, whose areas make up West Cumbria are relatively recent creations. They were formed by the reorganisation of English local government in 1974, covering the majority of what was previously the county of Cumberland (which included the city of Carlisle and the Eden District Council area). The area covered by the two authorities is of 1,500km^2 and is home to 157,500 people, with 96,400 in Allerdale and 69,100 in Copeland[1]. This gives a population density of 87 people per square kilometre, compared with 371 for the whole of England and Wales (see Table 3.1).

As the data in table 3.1 shows West Cumbria is a sparsely populated and rural area. It is also isolated as is shown in Map 3.2 which illustrates the location of West Cumbria in relation to the rest of the UK and its physical geography, clearly showing that West Cumbria is one of the most isolated parts of England from both London and the regional centres of population such as Manchester or Liverpool. The population is, despite being in a very rural area, concentrated in several towns. Table 3.2 shows the populations for each of the 'Key Service Centres', which are the larger urban areas (i.e. towns) in the two boroughs. The urban population can be seen to be 63,374 in Allerdale against a total population of 96,400 and in Copeland the urban population is 48,301 against a total population of 69,100. Thus in both cases roughly 2/3 of the population live in towns. In Copeland over half of that is accounted for by Whitehaven, the

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[1] Demographic and geographical information is obtained from the Cumbria Atlas, an online interactive data tool from the Cumbria Intelligence Observatory, a part of Cumbria County Council, available at http://www.cumbriaobservatory.org.uk/Atlas/CumbriaAtlas.asp

principal town of the borough. Indeed, a significant minority of the population, over 63,000 people out of 167,000 live in just three towns – Workington, Whitehaven and Maryport. West Cumbria therefore, while clearly a sparsely populated and isolated rural area, has significant urban populations.

The age structure of West Cumbria shows a sharp decrease between the 2001 and 2011 census in the proportion of the population accounted for by the 0-15 age group, down 7.6% in Allerdale and 12.3% in Copeland, compared to a slight increase nationally of +0.9%. The working age population grew in all cases, but the West Cumbrian increase of a little over 2% is small compared to the national increase of 9.1%. As a result the retired account for an increasing proportion of the population, growing over 6% more than nationally in West Cumbria over the 10 years. In short, the population of west Cumbria is becoming older at a faster rate than the rest of England and Wales. The decline in the proportion of the population accounted for by young people may be a result of low levels of immigration into West Cumbria, as immigration accounts for a proportion of the increase in young and working age people nationally (Bastland 2009). On all measures, the proportion of persons from outside the UK is lower for both Allerdale and Copeland than for the rest of England and Wales. Given their proximity to Scotland, it is not surprising that there are a higher proportion of Scottish people in Cumbria than in the rest of England and Wales. Crucially, the figure for immigration from outside the EU stands at 9% for the rest of the country, compared with less than 2% for Allerdale (1.4%) and Copeland (1.7%). West Cumbria is a particularly mono-cultural area, with a vast majority of the population being White British.

This isolated area, with previously shared governance (former Cumberland County Council until 1974), a generally similar economic history of extractive

and heavy industry, followed by its decline, and the vast majority of the people

of the same ethnic background, may be treated as having a common identity. A

survey conducted in 1995 by Newcastle University revealed that as a focus for

identity, West Cumbria clearly exists and resonates with the population. In

terms of belonging, West Cumbria is on par with home town and Cumbria, and

running second for being most proud to belong to.

	To which of these geographical groups do you feel you belong? %	Which one do you feel closest to? %
Home Town	40	37
Allerdale or Copeland	20	7
West Cumbria	39	22
Cumbria	39	19
England	24	6
Great Britain	24	4

Table 3.2 – Closeness to geographical groups (Hague and Wylie 1996)

Later evidence from the survey and focus groups conducted as part of this

thesis reinforce these findings, and secondary evidence suggests that there is a

distinct and strong West Cumbrian identity. Reaction to the proposed

reorganisation of parliamentary boundaries in 2010 reinforced the trends

evident in the data above. Currently, the parliamentary boundaries are almost

coterminous with the borough council areas (see map 3.1). Proposals to extend

Copeland east and include Windermere were met with near universal opposition

during public hearings and through written representations to the commission.

Alternative proposals were drawn up which saw a single West Cumbria seat

proposed. The commission, in revising the proposals, stated that the physical

barrier of the mountains which their original proposed Copeland and

Windermere constituency included would serve to divide the constituency and

that the proposals for a West Cumbria constituency enjoyed cross-party political support to "unite the industrial communities across the coast" (Boundary Commission for England 2012: 75) and that a West Cumbria seat would strike a suitable balance between geography and local ties. Challenges and disagreements over decisions made at various levels of local government in Cumbria have raised arguments for a reorganisation of the structure of councils in Cumbria. Councillors from across political divides in West Cumbria have advocated, as with the parliamentary boundaries covered above, a single West Cumbrian council (Whitehaven News 2014).

The physical characteristics of the area in particular have had, and continue to have, effects for the economic activities in the area and social issues related to the structure of the local economy. In the 1800s, extractive industries and those using the ports, such as fishing and shipping, were dominant. During the twentieth century related secondary industries grew such as chemical works, steel works, and others which used the products extracted from the earth. From mining under the land to fishing the sea, and using these products, these are all a result of the physical geography. In the second half of the 20th century its isolation, distance from major centres of population, and sparse local population (table 3.3) led to the area being selected to host the first generation of British atomic reactors at Windscale, adjacent to the village of Seascale. Over the course of the next sixty years the nuclear industry expanded, with the world's first commercial power producing atomic reactors, spent fuel reprocessing, fuel manufacture, research and waste management. While the nuclear site expanded other industries declined, with almost all the mining and heavy industry closing between the 1980s and early 2000s. This fall and rise has led

Sellafield and the wider nuclear industry to have a dominant position in the

labour market (Bickerstaff 2012: 2616).

		Allerdale	Copeland	West Cumbria	England & Wales
Population	Population	96,422	70,603	167,025	
	Urban population (in key service centres)	63,374	48,301	111,675	
	% Urban (in key service centres)	65.7	69.9	68.7	
	Population density (people per km2)	77.6	96.4	87	371
Age change (%)	0 to 15	3.1	1.9	2.5	7.8
	16 to 64	-7.6	-12.3	-10.0	0.9
	65 +	17.4	17.3	17.4	11.0
Place of birth	% England	94.0	94.1	94.0	80.0
	% rest of UK	3.3	3.0	3.2	6.6
	% EU	1.3	1.2	1.3	4.3
	% rest of world	1.4	1.7	1.6	9.0
Jobs (%)	Full-time	64.5	72.8	69.1	68.8
	Part-time	34.6	27.2	30.9	31.2
Gross weekly pay (£)	All full-time workers	£465.20	£653.70	£559.45	£508.00
	Male	£523.50	£736.30	£629.90	£548.80
	Female	£381.70	£588.40	£485.05	£449.60
Jobs by occupation class (%)	Professional	28.0	41.5	34.8	43.7
	Skilled	31.5	25.7	28.6	21.7
	Service	21.4	13.2	17.3	17.3
	Elementary	19.1	19.6	19.4	17.3
Nuclear	Proportion of Sellafield Ltd workforce in the area (%)	21.5	58.4	79.9	
Benefit claimants (% of working age population)	Total claimants (all benefits)	13.2%	14.7%	14.0%	12.7%
	Employment Support Allowance and incapacity benefits	6.6%	7.6%	7.1%	6.3%
	Key out-of-work benefits	10.0%	11.2%	10.6%	10.0%

Table 3.3 – Key population and economic data for West Cumbria

Sources – Population, Pay, Benefits Age and Place of birth obtained using the Cumbria Atlas interactive on-line data tool from Cumbria Intelligence Observatory from Cumbria County Council with age and place of birth being information from the 2011 census. Jobs data from the Office for National Statistics annual business inquiry employee analysis (ONS 2014); Nuclear data from Sellafield Ltd (Sellafield 2011);

Table 3.3 details the effect that the dominance of one industry has on the local labour market and economy. The data for full-time pay in Copeland, where nearly 60% of the Sellafield workforce reside, show a? higher than average proportion of full-time jobs, and average gross weekly pay for full-time workers substantially higher than for the rest of the country. In contrast, Allerdale, where only 20% of the Sellafield workforce lives, shows pay below the national average. The industry breakdown, showing a greater proportion employed in the higher occupation class groups (Groups 1-3, which are managerial and professional) in Copeland, demonstrates the effect that Sellafield has on the local economy. It has created a highly paid workforce in an area of otherwise below average pay, with a greater than average proportion of those being full time, professional jobs. However, despite the clearly privileged opportunities afforded by the Sellafield site and the nuclear industry for West Cumbria and Copeland in particular, the data for benefit claimants shows that it is not opportunity for all. In Copeland, an area where average full-time pay for men is nearly £200 per week higher than the national average, an additional 2% of the working age population are claiming state benefits, an increase of 15.7% over the national rate. The increase in benefits is accounted for by the higher proportion of the working age population in particular in Copeland who claim out-of-work benefits, such as employment support allowance. There are two groups in West Cumbria, and most starkly in Copeland where the majority of the very highly paid Sellafield workers reside, those who can and do work at Sellafield and in the nuclear industry and who are paid very well, and those excluded for various reasons from accessing jobs in the nuclear industry.

Despite the polarised local job market, the social issues that this exacerbates, and the environmental incidents (detailed earlier), public opinion towards the

nuclear industry in West Cumbria is very positive as the data in table 3.1 demonstrates. In the mid-1990s national public opinion was at its lowest level of support, in part as a result of the Three Mile Island partial meltdown in 1979 in the United State and the Chernobyl disaster in 1986 in the Ukraine. However, despite national opinion being very unfavourable, in West Cumbria public support for the nuclear industry remained high.   This is perhaps in part due to the centrality of the industry to the local economy, also the decades of association and familiarity and the lack of any apparently realistic alternative for the area. A local economy which is dominated by one employer is inevitably going to have insiders who benefit and outsiders who are disadvantaged in a way that a diverse job market would be less prone to. As will be explored later in chapter seven, in the contemporary global economy, there are risks that attempts to 'go global' and compete based on the unique characterises of an area can serve to reinforce existing power inequalities. The opposition for the industry locally is more complex than simply not biting the hand that feeds West Cumbria, and support is strong despite the obvious side-effects, and this is explored in greater detail in chapter seven.

	Favourable %	Neither or don't know %	Unfavourable %
West Cumbria (2012)*	60	10	30
National (2010)	34	23	41
National (1997)	23	18	58
West Cumbria (1996)	60	19	18
1996; 1997 (Wylie 2011) 2010 (Ipsos MORI 2010) 2012 (Ipsos MORI 2012) *Support for the continuing the process to find a site for the most hazardous radioactive wastes in the area			

Table 3.4 – Public support for the nuclear industry at national and local levels

3.4 – Conclusion

This chapter has demonstrated the ways in which the West Cumbria area is unique in comparison to the rest of the country, through demographic, economic and other data. The chapter has also explored the development, growth and change in the nuclear industry as it has applied to the region. It has shown the isolation of West Cumbria and its specific and unique demography and economy. I have also highlighted briefly the complexity, scope and scale of nuclear activities, both in the present and past, which have come to dominate in the area, particularly Copeland, in terms of the economy. I have further demonstrated how the combination of the physical social geography of the area, with the dominance of the nuclear industry, has created a polarised social outcome of significant wealth and poverty in the same region. These are all issues which are analysed in detail later in the thesis. Their exploration above was necessary to provide some of the key background to the development of the research question, which is further elaborated in the next chapter.

CHAPTER 4 – RESEARCH STORY AND DESIGN

4.1 – Introduction

This chapter describes how this research developed, initially from a personal standpoint, and then moves on to consider the foundations for this research in terms of ontology and epistemology, and the relationship these all have with the methods employed and data gathered. This is a particularly complex journey for this thesis, combining a very personal, embedded research story with a slightly convoluted path from data collection, through an examination and resubmission, to this thesis. The chapter starts with the personal story of the researcher and the research, before turning to the aim of the research which flowed from this, then considering the foundations of the data in terms of the underpinning philosophy of research, before turning to consideration of how these influence, and are influenced by, types of data. The chapter ends by describing the details of the data collection.

4.2 - My story of the research

This research has had a long and slightly convoluted path to this thesis. I will explore that journey in this section. The primary driver for the research was my own position in the case-study area.

I was born, grew up, was educated, lived and worked in Whitehaven, the principal town of the Copeland Borough in West Cumbria. I worked here during and after my undergraduate degree, and still do, although no longer living in the area, having moved to Cumbria's only city, Carlisle. I was elected to Copeland Borough Council in 2011 to represent the Hillcrest ward. This is the area in

which I was born, raised, and educated, and the majority of my family still live. This was a position I held until 2015, when I stood as a candidate for the Copeland parliamentary constituency at the general election.

My time as a borough councillor in particular is very important to this research. During my four years as a borough councillor[1], the local authority and wider region faced a number of issues. There were, during those four years, three major nuclear issues which were described earlier and are analysed later, and these were debated locally: the contract to manage the Sellafield site, the process to find a site for an underground waste disposal facility for higher activity radioactive wastes, and the potential siting of three new nuclear reactors and their associated infrastructure and development. Controversially among members of the authority at the time in 2013 the Sellafield site management contract was re-let to the international consortia which had held it since 2008. The contract was then subsequently terminated in 2015 before the end of this five year extension. Secondly, in 2013 Copeland Council (and Allerdale Council) voted to continue with the search for a local site for higher activity radioactive wastes, while Cumbria County Council vetoed the process, forcing government to change its policy, and creating tension locally for some time leading up to and following the vote by the three authorities. Thirdly, the Moorside site adjacent to Sellafield progressed towards potentially hosting three nuclear reactors. All three of these issues had their own specific debates and arguments, in the council chamber and beyond, but they also prompted an

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[1] In that time I served on the development management committee, was vice-chair of the strategic planning policy committee, vice-chair of the committee which established a town council for Whitehaven, vice-chair of the constitutional reform working group, a member of the personnel panel, a director of the company which managed local leisure services, and then played a key role in the reorganisation of those leisure and cultural services in the borough and took part in a number of other committees and groups.

overarching conversation about the relationship between West Cumbria and the nuclear industry, particularly in relation to the benefits the area should receive. This was given greater salience by the changes to local and central government spending brought about following the 2010 election and emergence of the Conservative/Liberal Democrat coalition government, which locally saw council budgets reduced by approximately 50%. I do not go through this for reasons of self-gratification, but because it is important in understanding why I had an interest in exploring the impact that the nuclear industry has upon West Cumbria and the people who live here.

Indeed, growing up in West Cumbria it is impossible to escape Sellafield. In a large part of the borough of Copeland it is visible; special buses would run workers around the region to and from work; the site sponsors local clubs and teams; you would know someone who worked there, quite likely to be a family member, as my father, brother, two uncles and other family members all did; local newspapers would carry stories about Sellafield most weeks, both 'good' and 'bad' news items; the Sellafield visitors centre (no longer open) was a popular visitor destination[2]; Sellafield staff would give talks in schools; in the 1990s Nirex had an education centre which schools, including mine, visited; Sellafield site sirens can be heard nearly 20 miles away; radioactive waste shipments travel by road and rail through the area. This is just a small pen-picture of the closeness of the nuclear industry to the local community from my own personal perspective.

My own long term familiarity, having grown up in the area, became a much more focussed concern once returning to West Cumbria in 2008, after my

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[2] Until 2001, there were even regular bus tours around the Sellafield site.

undergraduate degree, to work as a consultant in the public aspects of radioactive waste management. Over this time, conducting research and visiting other nuclear sites around the European Union, it became clear to me that the relationship between Sellafield and West Cumbria was not common to all nuclear sites: although elements were found at others in similarly remote areas such as Dounreay in Scotland, the scale of the west Cumbrian nuclear industry was just so different. I began to wonder what effect this had on the people in the area.

I found that the economic and social effects of the polarisation of the local labour market became much more apparent to me during my time as a borough councillor. The fact that there were people with more or less money than others was, of course, not lost to me up to that point. However, it was at this time that the complex relationships between geography, economy and the implications of policy started to become clear. Until that point I had believed that the nuclear industry had only a positive social and economic impact on West Cumbria. I still believe that, in and of itself nuclear is not necessarily a bad option for the area, but rather that the economic domination of one industry has unfortunate side-effects due to the lack of diversity in the labour market. This is a theme which is explored in this thesis.

My initial line of inquiry focussed on the relationship between the nuclear industry and the local to global outlook of people in terms of their lived experience of citizenship. This theme was prompted by changes in the nuclear industry from 2008 highlighting the paradox of an area so isolated, yet so globally connected as having been for several decades the home of the UK nuclear industry (as described in chapter three). However, the focus in this

work shifted to the wider relationship between a global industrial actor and its regional host, and what this can tell us about neoliberalism and globalisation.

4.3 – Aim and research questions

As outlined in the introductory chapter, the central aim of this thesis is: '*What is the relationship between a global industrial actor (Sellafield) and its regional host – and what insights does this relationship offer for understandings of neoliberalism/globalisation?'* Addressing the aim in this thesis is undertaken by addressing three subordinate research questions, which are*:*

- RQ1 - Political: How have local, regional and national governance arrangements been modulated through the presence and actions of the nuclear industry in West Cumbria?
- RQ2 - Social: How is the nuclear industry viewed in West Cumbria, and how has this changed in line with wider shifts in terms of state-industry relations?
- RQ3 - Economic: What are the implications for regional competitiveness arising from the changing relationship between the state and market for the nuclear industry in west Cumbria?

The aim is informed by my research story and informs the research approach. This chapter explores the type of data and approach taken to address these questions, the details of what data was gathered and how and ethical concerns which are raised. The research questions do not dictate a specific approach, but as will be explored the combination of the questions, data and the preferences of the researcher do combine to tend towards an interpretivist

approach, focusing on analysis of discourse and a focus on context and meaning in a specific case.

4.4 - Going from ontology to method: the research approach

There are two ways of approaching this section. There is the potential to pretend that a burning desire to be an interpretivist directed everything which followed, or the honest answer that the approach was for the most part directed by the problem which emerged during the examination and resubmission of the first thesis, and in part by the data, which was consequently extant by the time this resubmitted thesis was begun. As will be described in greater detail later, the data in this thesis is predominantly drawn from analysis of discussion and text, and supplemented by survey data. This mixture of qualitative and quantitative data presents a challenge to ensure there is an "internal coherence" (Della Porta and Keating 2008: 38) from ontology to method. Some data can quite clearly lend itself to a certain methodology and approach, while some research uses multiple sources of data, as this thesis does, to "triangulate" findings (Della Porta and Keating 2008: 34) and this has implications for the ontological and epistemological approach, which is less clear.

At an ontological level, the key distinction to make is between the view that "categories are there to be discovered" and the view that "categories only exist because we create them", the realist and nominalist positions respectively (Della Porta and Keating 2008: 21). Della Porta and Keating (2008: 23) take the two ontological positions to identify four epistemological approaches from positivist to humanistic which form "positions on a spectrum" rather than hard

and fixed categories, each with their own ontological and epistemological issues. These are reproduced in table 4.1.

		Positivist	Post-positivist	Interpretivist	Humanistic
Which methodology		Empiricist, aiming at knowing the reality	Mainly empiricist, recognising context	Relative focus on meanings, context	Focus on values, meanings and purposes
Which method/s		Imitating the natural method (experiments, mathematical models, statistical analysis)	Based upon approximations of the natural method (experiments, statistical analysis, quantitative interviews)	Seeking meaning (textual analysis, discourse analysis)	Empathetic reactions between researchers and object of research

Table 4.1 – How many methodologies in the social sciences? (della Porta and Keating 2008: 32)

Ontologically, this research draws upon both realist and nominalist positions. This is a "critical realist" epistemology, which attempts to be an "alternative both to naïve realism and to radical constructivist views that deny the existence of any reality apart from our constructions" by accepting an "an ontological realism (there is a real world that exists independently of our perceptions, theories, and constructions) while accepting a form of epistemological constructivism and relativism (our understanding of this world is inevitably a construction from our own perspectives and standpoint)" (Maxwell 2012: 5). Critical realism shares this recognition of the existence of an objective reality with social

constructionism, where it is recognised that this world and the categories which are assigned to it filter knowledge and these two epistemological positions are thus similar and consequently tend towards the interpretivist approach (Della Porta and Keating 2008: 24). Therefore, while "there is no possibility of attaining a single, "correct" understanding of the world" (Maxwell 2012: 5) it is recognised that it is "impossible to understand historical events or social phenomena without looking at the perceptions individuals have of the world outside" (della Porta and Keating 2008: 24-25). Following on from this ontological middle ground and epistemological critical realism, this thesis follows an interpretivist approach which seeks explanation for observable social outcomes, similar to positivist approaches, but rather than use external and universal rules to arrive at explanation, draws on the motives of social actors to explain outcomes (Ferejohn 2004: 146). In seeking to explain the motivations of social actors, research must seek to understand their "situational self-interpretation" (Flyvbjerg 2001: 47) or "cultural perspective" (Della Porta and Keating 2008: 26).

The key concepts in this research, power and scale, lend themselves to being studied in this way. Power differences between different actors are an observable fact, in so far as some people and groups will be stronger than or dominant over others, but the situations in which this matters and the outcomes it affects are socially constructed and situational. Scale, likewise, is both a fact (e.g. individual versus group) and a construction (e.g. multi-scalar governance) where the importance attached to scales and their change is determined by the priorities of situated actors.

There are implications for the conduct of research from the interpretivist approach. The path from theory to data, or from data to theory in this case,

does follow to some extent the path laid out by the "grounded theory" approach, in which theory is built up during the research and, as a consequence of this and the focus on specific contexts and meaning as explanations for action, research "then takes the form of specific explanations of cases" and provides refinement of theories for later cases (Della Porta and Keating 2008: 27). In such a grounded theory approach, the "generation of theory occurs around a core category" without which the research "will drift in relevancy and workability" (Glaser 1978: 93). The core categories in this thesis are scale and power, which emerged from the data.

4.5 - Learning to ride the bicycle: Data collection and analysis

In this section I will explore and justify the data collection for this thesis. There are four principal sources of data collected for analysis, in addition to some secondary quantitative data, particularly related to the demography and economy of the focus group area. These principal sources of data for analysis are:

- Documents relating to policy, such as white papers, council papers, and press statements made regarding issues at national and local levels relating to the nuclear industry and economic development;

- Six semi-structured focus groups carried out in West Cumbria;

- A representative sample postal survey to 4000 households in West Cumbria; and,

- Interviews with, and public statements by, seven key individuals.

The two key sources of data among those were the documents relating to policy at national and local levels and the six focus groups conducted in West

Cumbria. My situation in West Cumbria had substantial benefits for the collection of the qualitative data which is highlighted through the course of this section as the justification and mechanics of the data selection and collection are be explored in detail. However first I want to briefly outline my experience of managing a complex array of mixed methods research. In the course of writing this chapter, I came across an interesting metaphor:

> Analysis of discourse is like riding a bicycle compared to conducting experiments or analysing survey data which resemble baking cakes from a recipe … it is not a case of starting first you do this and then you do that. The skills required are developed as one tries to make sense of transcripts and identify the organisational features of documents (Potter and Wetherell 1987: 169)

I find this statement fascinating, going from strongly agreeing to very strongly disagreeing with it before the end of the first sentence. Explaining why provides me with the opportunity to explain my own experience of how this research was conducted in practice. The two metaphors, of riding a bicycle and baking a cake, are both on the face of it very apt. For exploration of qualitative data, where the text is the material conditions (the bicycle and ground), riding it is a long process of trial and error. Policy documents, focus groups, interviews, statements and so on represent changing terrain and conditions. For this research, just as I begin to become familiar with one document, then the next is very different, and the challenge continues. The point of this laboured metaphor is that for this research, the range of different types of discourse being analysed presented a challenge, as the skill has to be constantly learned and re-learned. However, the baking a cake *from a recipe* metaphor does not work for my own experience of quantitative data analysis. I found that while analysing survey

data could be compared to baking, it was more like having a diverse array of ingredients, a desire to make some sort of pudding, but having through trial and error to attempt many different recipes using different combinations of ingredients. This process would yield disappointing failures and exciting surprises. There were many ways in which analysis of survey data followed a set plan, but also many times where merely trying new combinations would yield unexpected, significant and interesting results. This is how I approached the analysis of the quantitative survey data.

4.5.1 - Qualitative data collection

Policy documentation and interviews

The point at which documents are selected for analysis in the empirical chapters is 1983. This date is selected for two reasons. The first a national and the second a locally specific reason for West Cumbria. The first reason for selecting 1983 was this was the year that Yorkshire Weekend Television broadcast the documentary 'Windscale: Britain's Nuclear Laundry', alleging links between the industry and clusters of childhood leukaemia in the nearby village of Seascale. From this point, following inquiries into the matter, nuclear sites began to engage with their communities across the UK with the establishment of independent scrutiny committees. The second reason, specific to Cumbria, was that the last remaining deep mine had closed in 1981 (Haig Pit in Whitehaven) and other industrial concerns were facing closure. Consequently, initiatives were set up, and in 1983 the West Cumbria Leaders Board was formed as a way to explore how to use the presence of the nuclear industry as a catalyst for economic development to offset the decline in other

industries. Thus, prior to 1983, nuclear sites like Sellafield were in their first 'phase' (Pemberton 2015); inward looking, isolationist and secretive. While they clearly still had a great impact on the communities in which they were hosted, this date is the first time they actively sought to affect the future of their communities. This is why that date was chosen for this thesis. These themes are explored further in chapters three and seven.

The selection of documents themselves however was not necessarily straightforward. National and local policy presented different barriers. At a national level, the issue was volume of documents, and at a local level the opposite was the case, with little written on policy towards the nuclear industry. The Local Government Act (1999) moved councils to a Westminster-style legislature and executive cabinet, rather than the traditional committee system of local governance. This is part of the wider shift from legislatures to executives seen across the developing world (Sassen 2008). In the case of nuclear issues in Cumbria, the local authorities class this as an executive function. Despite stating they would develop a suite of nuclear policies while I was a councillor, Copeland Borough Council never did so. The council's position on nuclear issues is hard to determine from records where many meeting minutes simply record decisions, not discussion content. However, many documents do make reference to the council's position on nuclear issues in justification for related decisions, such as in economic development and planning decisions. This leads on to the documents actually selected for the study, as detailed in table 4.2.

The way to take on the selection of documents at both the national and local levels was to establish a rough timeline of key events in the period from 1983 locally and for policy at a national level and gather any associated documents.

While analysing these, further suggestions would emerge in related documents. This was essentially a snowball sampling of documents. Table 4.2 lists all the documents used, principally in chapters five and seven, as primary material for this research.

Year	National	Local
1987		• WS Atkins Report – West Cumbria Joint Initiative
1992		
2001	• DTI - Managing the Nuclear Legacy - whitepaper	
2002	• DLTR – Regional Whitepaper	
2003	• DTI - Our Energy Future: creating a low carbon economy - whitepaper	
2004	• Energy Act	
2005		• Report to Cumbria County Council Regeneration Scrutiny Panel on the Cumbria Vision Board
2006	• DTI - Energy Challenge Energy Review Report • NDA Strategy 2006-2011	• Cumbria Vision Strategic Plan 2006-2016 • North West Development Agency – The North West Plan • North West Regional Assembly - Submitted Draft Regional Spatial Strategy for the North West of England
2007	• BERR – Energy Whitepaper • NDA Annual Report and Accounts 2006/07	• Britain's Energy Coast Masterplan • Copeland Council – Report to Executive on Energy Coast Masterplan
2008	• BERR – Nuclear Whitepaper • DEFRA - Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal whitepaper	• Allerdale Council - Report to the Nuclear Issues Task Group
2009		• Copeland Council - Report to Executive - Nomination of the Sellafield site for new nuclear power stations. • Cumbria Vision Cumbria Economic Strategy 2009-2019
2011	• NDA Strategy 2011-2016	• Sellafield socioeconomic development plan

	• NDA Contracting and Incentivsation policy	
2012	• Public Accounts Committee report on Sellafield	• Britain's Energy Coast Economic Blueprint • Local opinion poll – radioactive waste disposal
2013	• DECC - Press Release – Energy Secretary Responds to Cumbria Nuclear Vote • KPMG review of performance at Sellafield • NDA – Operating Model Guidance on Roles of SLC and PBO • NDA – Guidance on SLC handover between PBOs	• BBC News – Report on new reactors • BBC News – Report on waste store rejection • Copeland Council Local Plan • North West Evening Mail – News Report – Britain's Energy Coast blueprint
2014	• Letter from CEO of NDA to DEC Permanent Secretary re nationalisation of Sellafield • DECC - Implementing Geological Disposal: A Framework for the long-term management of higher activity radioactive waste – whitepaper • NDA – Position paper - Progress on plutonium management • NDA - Sellafield Options – Outline Business Case	• Allerdale Council Local Plan • Britain's Energy Coast Press Release • Sellafield Procurement plan and contracting strategy
2015		• Whitehaven News – NMP stripped of Sellafield contract
2016	• ONR – Nuclear site licence conditions handbook • ONR – History of MOX fuel manufacture at Sellafield	• Cumbria Local Enterprise Partnership Skills Investment Plan 2016-2020. • Sellafield – Internal Magazine – Issues 3 and 5 • Whitehaven News report – Job lossed in Sellafield supply chain

Table 4.2 – Sources of documentary data

	Nuclear	Economic development
National	Legislation White papers Strategies, plans and reports Parliamentary (e.g. transcripts of debates, written answers) Correspondence Press statements	Legislation White papers Strategies, plans and reports Parliamentary (e.g. transcripts of debates, written answers) Correspondence Press statements
Local	Council meeting items Policy documents (i.e. development management policies) Meeting minutes Correspondence Press statements	Council meeting items Council policy documents (i.e. development management policies) Strategies, plans and reports from councils and agencies Press statements

Table 4.3 – Data types

This table divides – somewhat misleadingly, particularly for the local level, given their close relationship – the types of nuclear and economic development documentation analysed as separate bodies of material. There is not such a clear split when the nuclear industry is the largest employer in the region. However, for the purposes of illustration here the binary distinction is useful. The selection of these sources was not pre-determined, but initially directed by my own familiarity with the two subjects and institutions involved, as explored earlier. Interviewees also provided direction to documentation. Obtaining historic documents relating to the local level was assisted by interview participants and others, particularly including multiple versions of documents and historic and current correspondence. Also, as it was read, the key documentation, such as white papers, was broadened out to include more diverse sources as shown. However, particularly for policy decisions at the

local level, much is not written. Council meetings, for example, do not have transcripts, merely records of decisions taken. In addition, for some decisions, there is no formal record or documentation at all. To bridge any gaps, it was necessary to conduct interviews with key participants and for the most up to date information also to attend a number of public events.

Interview participants were selected based on my own knowledge of those with the information required towards the later part of the research. There were two interviews conducted with persons whom I know personally. The two participants were very closely involved in the initial set-up, and operation of the West Cumbria Partnership which is central to economic development of West Cumbria analysed in chapter seven. These interviews were not recorded, but written notes were taken, as agreed with both participants.

Further qualitative data, particularly for ongoing developments and new announcements, was gathered from the public statements of key individuals, both locally and nationally. Public events attended were as follows:

- Copeland Growth Strategy launch, 27th May 2016, at Muncaster Castle, near Ravenlgass in West Cumbria. The elected Mayor and Managing Director of Copeland Borough Council, Mike Starkie and Pat Graham, and the local Member of Parliament for Copeland, Jamie Reed MP, all spoke regarding economic development in the region. I was able to be invited to this event as a result of the people I knew, and who knew me, from being an elected member of the borough council. This event was not recorded, but notes were taken.
- Conference on Public Value Management, held at the University of Central Lancashire's campus on 8th July 2016, where among others, Meg

Hillier MP, Chair of the House of Commons Public Accounts committee spoke about Sellafield. I organised this event as part of my employment. This event was recorded.

- Cumbria Nuclear Conference, on 22 September 2016, where Professor Paul Howarth, the Chairman of the Centre for Nuclear Excellence (CoNE) and Managing Director of the National Nuclear Laboratory spoke about the CoNE, and Tom Samson, the CEO of NuGeneration Ltd spoke about the nuclear reactors they plan to build in West Cumbria. These contributions covered nuclear and economic developments in West Cumbria. I was assisting in the running of this event due to my knowing the organiser, John Stevenson MP, the Member of Parliament for Carlisle[3]. This event was not recorded, but notes were taken.

Focus groups

Ideally, focus groups would have been selected because they were thought to be the best way to explore the scaling of power and spatial governance in West Cumbria. However, the relationship between the data and the final aim of the thesis was more symbiotic, with the data collected leading the research in that direction. However, despite this journey, the focus group participants were selected based on their unique perspective on the relationship between Sellafield and West Cumbria, which has been a constant thread throughout the project. As a consequence, these groups were selected by purposive rather than representative sampling. The aim of the focus groups was not to seek findings generalisable to the entire population (Smith and Morrow 1991). The

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[3] In addition, my wife works in his parliamentary office.

six groups were chosen for their different perspectives on the relationship between West Cumbria and the nuclear industry. The six groups were varying in their proximity to the nuclear industry, and could give a perspective on the past, present changes and future issues in the area and industry.

Number	Date and time	Background	Participants	Location	Inducement	Class
1	Tuesday 24/09/2013 12.00-14.00	Sellafield professional workers	6	University of Central Lancashire Campus, West Cumbria	Lunch	Middle class
2	Monday 02/12/2013 15.00-17.00	Copeland Borough Councillors and senior officers	5	Copeland Borough Council	Tea, coffee and cake	Mixed
3	Friday 13/12/2013 12.20-13.00	Whitehaven School sixth form pupils	15	Whitehaven School	Credit within school	Middle
4	Wednesday 05/02/2014 12.00-14.30	Sellafield industrial trades' union leaders	3	University of Central Lancashire Campus, West Cumbria	Lunch	Working
5	Thursday 20/02.2014 12.30-13.30	Lakes College West Cumbria students	5	Lakes College West Cumbria	Lunch	Working

Table 4.4 – Focus group details

Two groups from Sellafield were recruited to reflect the major distinction between workers on the site, staff and industrial workers. Two groups of young people were recruited, those undertaking A-levels and intending to study at university, and those in education at the local college and intending to stay in West Cumbria. Borough councillors and senior officers were intended to give a

broad overview of changes in the area. One group was attempted to be recruited from parish councils, via the Cumbria Association of Local Councils, but insufficient responses were received.

Focus groups were preferred over interviews for several reasons. The group interaction which characterises the focus group is much less reliant on specific questions for yielding valuable data. This was particularly important given my own position in the area. Consideration was given to having an independent person facilitate the groups, but the nature of focus groups was thought to be sufficient to ensure reasonably self-sustaining discussion which was not going to be unduly influenced by the researcher's own perspective. These were also not the first focus groups that I had conducted, having been a commercial contract researcher for several years prior to this research. At no point did it appear that the presence in the room of someone, particularly for the council and industrial trades' union groups, who had a clear political affiliation, had any impact on the discussion being free and open. In addition, for very practical reasons, the geographical size of West Cumbria makes interviews more challenging to conduct, given the time, cost and travel involved.

Recruitment of these groups was in all cases, except one, through gatekeepers in organisations. The recruitment of Copeland Borough Councillors was conducted by e-mail to the councillors and senior officers e-mail group to which I had access personally as a councillor. For each of the remaining groups an individual who was known to me prior to this project was contacted requesting their assistance, and in each case except the trades' union group the request was passed on to a colleague who arranged the group. For the industrial trades' union group, I knew each of the three union leaders personally and my father had been a shop steward with one of the unions, the General and

Boilermakers Union (GMB), at Sellafield for approximately 25 years. This enabled me to contact one directly, who recruited the others.

4.5.2 - Analysis of the qualitative data

Focus groups were recorded and transcribed by the researcher, which better enabled the principal data source to be both accurately recorded, and through transcription, have the researcher fully immersed in and knowledgeable of the data. Interviews, of which there were only two, and public events were recorded in notes and typed up. This was added to by documents, which in this project are used as primary data.

Selection of quotes from focus groups focussed on highlighting key points. Discussion did include many other issues, which were related to varying degrees, but the quotes selected were not covering every issue raised. On a practical level, the coding itself was done in both hard-copy first and software later, to enable easier access to the data. The coding went through stages, focussing first on identifying large sections of any relevance to the research questions, then over time condensing the size of the quotes and their number by adding additional coding sub-categories. From these the selected quotes were picked from the transcripts. This approach was the same used for the analysis of documents. The codes used related to the key elements of the theories and approaches outlined in chapter two, such as where the role of elites, barriers to regionalism and so on were mentioned, along with quotes providing the wider context of the restructuring of the state and nuclear industry.

4.6 – Research ethics

The intention in any ethically sound research is to maximise the benefits of the research while causing the minimum harm. The whole study was approved by the UCLan ethics committee, but it will be useful to highlight a number of ethical issues that are particularly important to the research design

This project does not cover any sensitive, personal or other 'at risk' topics, and does not engage with any groups deemed to be particularly relevant to greater ethical scrutiny of the project, with the exception of two focus groups with children between the ages of 16 and 18. These participants were in a school environment. The issue of consent is complex here. The recruitment of participants was undertaken by a teacher, and in such circumstances there may be an expectation placed upon the participant or even a risk of coercion. This was minimised by the briefing of the teacher before recruitment, distribution of consent forms and other information to participants before the focus group began. As with all other research in this project, withdrawal by participants was a permanent option and there no sensitive topics covered.

My position as a situated researcher, being an elected councillor in the area under investigation, was a potential ethical issue. The practical benefit it brought, in knowledge and contacts, could have been outweighed by problems when dealing with people who did not share my own political views. However, this was not the case, as while the issue was never raised in any group nor did it appear to have any detrimental effect on recruitment, the issue was still considered. A condition common in any research is that data collected must only be used for the research project it was collected for which was the case in

this project. I believe, rather than being an ethical challenge, my status and background gave me credibility and authenticity.

4.6.1 - Anonymity

This research has gathered information from people through survey, focus groups and interviews, and each has their own specific issues to address relating to the protection of personal data and the maintenance of strict confidentiality and anonymity. For survey data, this challenge relates to the traceability of the person from their participation. The only link between responses and personal data is a unique code on the consent form and survey, which are stored separately in hard copy. No electronic link can be made between survey data and participant details. This is therefore a challenge of storage of data, and is undertaken in line with the University's policies on data storage and retention. There is absolutely no possibility to link survey results to any person from this thesis document, as no individual responses are used. The hard copies are securely locked for five years from the point of collection prior to secure disposal via confidential shredding.

For focus groups and interviews, the potential for the participant to be identified from what they have said is much greater. In the case of the focus groups, no names are used at all, but the broad category of the group is used to identify each quotation. For the interviews, the same approach is taken, but only to the fullest possible extent. The description of the interviewee must be suitable to give the necessary context to the quotations used and someone very knowledgeable about the subject might be able to identify the participant. However, no personal names are used, and care is taken that the material quoted must not be sensitive, inflammatory or derogatory. This is in line with what was agreed with participants and approved by the ethics committee.

4.7 – Case study selection

As the title of this thesis makes clear, West Cumbria is the unit of analysis for this research. The area is defined geographically as the extent of the Allerdale and Copeland Borough Councils on the west coast of Cumbria, in the North West of England. The selection of this area for study is based on the fact that the nuclear industry "dominates the whole area not only economically, but also socially and culturally" (Wynne 1992: 284). This was described in chapter three, and as is analysed later in this thesis, West Cumbria is both very isolated and very globally connected and it supports the nuclear industry despite recognising its negative impacts. These "surprising value[s]" make West Cumbria a "deviant case" (Gerring 2007: 105), which is unique and justifies the selection of a single-case design for this research (Yin 2009: 49). The methodology, outlined earlier, seeks to explain the impact that the nuclear industry has upon the scaling of power in West Cumbria. In practice this means "attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them" which is a "situated activity" (Denzin and Lincoln 2000: 3) where rather than for generalisability and comparison, cases are selected "on the basis of their inherent interest ... not because they are typical of a category but for what they tell us about complex social processes" (Della Porta and Keating 2008: 29). This is why West Cumbria is chosen as a single, complex case.

However, given this is a mixed methods study with a quantitative element, for the analysis of that data the single case in this research, West Cumbria, is the primary unit of analysis. Studying only one area prevents across case

comparisons from being made with other case study areas, but this design does not however preclude within case analysis. To achieve comparisons, the quantitative element of this research employs an embedded case-study approach involving more than one sub-unit of analysis (Yin 2009: 50). This involved splitting the sample into two particular "sub-units" of the overarching case, which are 'nuclear' and 'non-nuclear' groups. The nuclear sub-unit is defined as any individual who either themselves works in the nuclear industry or lives in a household with someone who works in the nuclear industry. Work in the nuclear industry permeates households given the dominant position of the industry in the area, and the high wages offered mean the single wage earning household is still viable in this area. This is the basis for the sub-unit definition employed.

There is then a potential for tension between the qualitative and quantitative data, where if the quantitative data was seeking to explain the phenomena under analysis (power) it would have to be fairly rigidly defined and operationalised from the outset. Clearly defined concepts are central to comparative research (Della Porta 2008: 29; Vennesson 2008: 230). However, in this thesis the quantitative data provides context, and concepts for the qualitative data analysis are "orientative" and refined as the research progresses, as is common in the interpretivist approach (Della Porta and Keating 2008: 30)

4.7 – Summary

This chapter has described the process of the research in this thesis. It has included the mechanics of data collection in the latter sections of the chapter,

but has also attempted to place the thesis in its wider context. For this research, given the case-study area and my own situation in the area, it is impossible to separate the two and consequently difficult to establish exactly where the imperative for the research emerged. Clearly the journey from initial data collection to this thesis, as described earlier, was not straightforward. The process of allowed the data to be very rigorously examined and to point towards something more meaningful and worthwhile of a PhD thesis. This chapter has put that story together and outlined how this was then taken forward, and situated the whole project within a certain methodological approach.

CHAPTER 5 – NUCLEAR LEGACY: CREATING COMPETITION

5.1 – Introduction

In this chapter, changes to the governance of the nuclear legacy are analysed. The legacy consists of the ageing facilities which were not privatised in the 1990s and are at or near the end of their lives and the current and future wastes arising from their use and decommissioning. In this chapter the changes in the nuclear industry which were introduced and described briefly in chapter three are analysed in terms of their implications for power at multiple scales. For the decommissioning of the nuclear legacy, the moves from a nationalised but arms-length commercial company managing the bulk of the ageing nuclear legacy, to a complex system of multilevel governance with public ownership and private management, then to direct public control are analysed. The moves from nationalisation, through part-privatisation, and back to nationalisation had a range of implications for how, by whom and for what purpose state authority is wielded in the nuclear industry. This has implications for the workforce and community, particularly with regards their term and conditions of employment. However, it is not the privatisation but the renationalisation which has the most detrimental effect on the rights of workers in the industry. The management of wastes and the search for an underground disposal site, which has been ongoing under three different policies since the 1980s, is analysed. The failures of policies towards decommissioning and waste management have a similar basis in the overreliance on a limited, albeit different, range of tools government has at its disposal to achieve its aims. In both cases power is rescaled as government applies different tools to the problems it faces in dealing with the nuclear legacy. This has implications for West Cumbria, as the major site for decommissioning and the only site explored for hosting an underground waste

disposal site in the past 25 year, which are analysed and discussed in this chapter.

5.2 – 'Creating a Market': Privatising the Nuclear Legacy

As was described in chapter three, the 1999s were the "true nadir of nuclear power" (Nuttall 2004: 2). In the UK and elsewhere the days of engineering-led innovation were replaced with a desire to de-regulate, contract out and move away from state provision (Nuttall 2004: 3). The civil nuclear industry in the UK had been though attempted privatisation, along with many other state assets, in the 1980s with little success[1]. By the early 2000s, with the second generation of reactors were privatised as British Energy, the state was left with the first generation fleet which was either shut-down or near to shut-down, a plethora of facilities related to fuel services in various states of age, condition and use and the reactor research sites. These facilities are spread art various sites across England, Scotland and Wales. Sellafield contains every type of facility, from fuel manufacture, through reactors, prototypes, waste facilities and so on. Many of these facilities were nearing the end of their lives by the 2000s. Consequently, Sellafield and much of the early nuclear estate had either reached, or was close to their transition from commercial operation to decommissioning. The high cost to the taxpayer of decommissioning, which had been the barrier to the privatisation of these early facilities in the 1980s and 1990s, had not disappeared. The need to decommission ageing facilities was

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[1] In 1988, the White Paper 'Privatising Electricity' had proposed that the nuclear fleet – owned by Nuclear Electric Ltd and Scottish Nuclear Ltd – should be privatised, but concerns for the cost of decommissioning, waste management and the generally favourable cost of coal, oil and gas generation by comparison at the time. This was overcome in the 1990s, when the more modern AGR and PWR reactors were privatised as British Energy and the first generation fleet remained state owned as Magnox Electric, later transferred to BNFL. (HoC Research Paper 14/61 2014: 10)

however only becoming more pressing. As was clear from the experience of the 1980s though a straightforward privatisation of was not an option to which the markets would flock. A new governance arrangement for the nuclear legacy was required, and in 2002 the White Paper 'Managing the Nuclear Legacy' set out the approach to 'creating a market' for nuclear decommissioning in the UK.

> "*Competition will be central to the LMA's* approach. *Developing competitive markets* for clean-up contracts will help to *stimulate innovation* and improvements in safety and operating standards and enable the LMA to make the best possible use of the best available skills.*" (DTI 2002: 13)

The new policy has two clear implications. Competition for the contracts to manage state owned sites, which the government believe will bring innovative practice to improve the decommissioning performance of those sites. In order to make this happen, a new arms-length body, the Liabilities Management Authority[2], would assume ownership of the state's nuclear liabilities and oversee the process for letting these new competitive contracts. This marked a completely different way of operating for these sites and, as will be seen throughout this thesis, this has implications for the communities in which they reside. In this section, I will explore the way in which this new model was implemented, before turning to look specifically at the privatisation of the management of Sellafield and its implications for power in West Cumbria.

5.2.1 – Public ownership, private management

The new arrangement for the state nuclear liabilities transferred the management and operation of public-owned nuclear sites and their workforces

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[2] Which later became the Nuclear Decommissioning Authority following the Energy Act 2004

to private companies. The new model for management of the nuclear legacy involves three key organisations in a contractual relationship with income earned through management fees and performance incentives. The key relationships are illustrated below, using the example of the Low Level Waste Repository in west Cumbria (Figure 5.1).
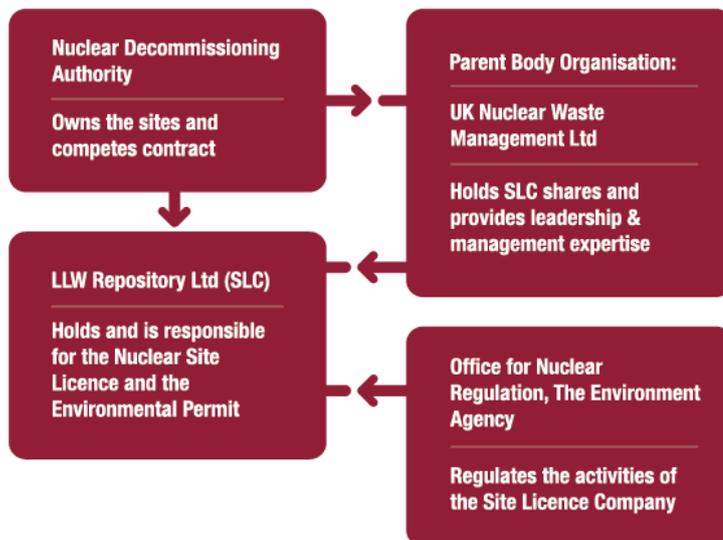
Figure 5.1 – Example of the Nuclear Decommissioning Authority/Parent Body Organisation/Site Licence Company relationship (for the national Low Level Waste Repository).

The three key organisations for nuclear sites are the Nuclear Decommissioning Authority (NDA)[3], who own the sites and let the contracts; the Site Licence Company (SLC), who employ the workforce and hold the nuclear site licence; and, the Parent Body Organisation (PBO) who own the SLC shares and provide the senior management to the SLC. In this sub-section each organisation's role, and how they relate to each other will be explored. This is necessary to understand impact that this governance arragement had at the Sellafield site.

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[3] A non-departmental public body (NDPB)

The roles of each organisation in this new model are straightforward, and detailed in figure 4.1. The key relationships are between the PBO, SLC and NDA. These relationships are governed by two different contracts between the three organisations; the 'Management and Operations Contract' between the NDA and the SLC; and, a contact between all three parties called the 'Parent Body Agreement' (Leech 2016: 5). The NDA owns the sites, sets the strategy and contracts private organisations to undertake work at each site. The Site Licence Company is the holder of the licence and environmental permits, and retains a suitably qualified workforce. The PBO, which is the most novel element of the new structure, owns the SLC and provides its senior management. The contract for the PBO is competitively let by the NDA and can change, in contrast to the SLC which endures.

There are two principal regulators, the Office for Nuclear Regulation (ONR) and the Environment Agency (EA). Their roles relate to nuclear safety and environmental discharges respectively. Of particular interest is the nuclear safety regulator, which only interacts with the SLC. It does so in six different ways: Directions, consents, approvals, notifications, specifications, and agreements (ONR 2016a: 2). These six different forms of interaction, ranging from having to be notified by the SLC to directing its activities, cover 36 conditions which the regulator places upon the licensee. The majority of these relate to nuclear safety, plant operations and so on. The final condition which the ONR places on the SLC relates to the model of contractorised ownership. While the regulator does not directly interact with the PBO, in condition 36 the "Organisational capability" of the licensee is regulated, such that "The licensee shall provide and maintain adequate financial and human resources to ensure the safe operation of the licensed site" (ONR 2016a: 22). In doing this the ONR

can regulate organisational changes within the SLC by the management (the PBO), thus in theory limiting the influence any incoming PBO has over its newly acquired subsidiary company. A condition with a similar aim is imposed through the contract between the NDA and the PBO:

> "The SLC should not be immediately vulnerable to management changes or loss of key knowledge and skills that could arise from a change of ownership resulting implementation of the NDA's contract options or the PBO's withdrawal or default" (NDA 2013a: 6)

This implies that the operational role of the PBO is limited, however, their influence over the operation and direction of the SLC is in fact extensive. Within the confines of the contract between the PBO, SLC and NDA, the parent organisation is incentivised to 'change' the SLC:

> "The PBO has no direct operational responsibilities for the sites operated by the SLCs. However, through its secondees into the SLC, the PBO provides the vision, leadership and change to translate its tender commitments into operational reality" (NDA 2013a: 9)

This new model uses a contract to govern the relationship between the NDA and PBO. There are eleven elements of the contract, but none of them relate to socio-economic concerns (NDA 2013a: 10-11). The closest the NDA comes to providing the guidance for the PBO in social concerns is in the handover between outgoing and incoming PBOs where "unions and labour relations" are considered a key part of PBO transition, and "Stakeholder Support" is classified under "other matters" and relates to "defining an understanding of Regulator Support and Public Affairs/Public Relations" (NDA 2013b: 8-9). This to some extent goes against the principals outlined in the original 2001 White Paper and

the later 2004 Energy Act which stated that the new governance arrangements for the nuclear industry could only work if they had the "ability to command public confidence" (DTI 2002: 13).

There are two ways in which staff from the PBO work in the SLC. The first is that the PBO provides, through secondment, the senior leadership for the SLC. These staff "become SLC staff for legal and employment purposes" (NDA 2013a: 7) and as such have to act primarily for the benefit of the SLC. Other staff, on a more ad hoc basis, can be brought into areas where the SLC requires specific expertise, through a process called 'reachback'. The combination of these staff, but in particular the seconded senior leadership team, are tasked with leading the SLC by designing plans to deliver on the contract and strategy of the NDA. The issue of the role of senior executives being seconded in will be explored in more detail in specific relation to Sellafield later, particularly the issue of secondment and loyalties. However, first it is necessary to continue to explore the new model by turning to the contracts for the management of sites.

5.2.2 – Competitive Contracts

In the initial period following the creation of the LMA and through the establishment of the NDA in 2005, the future arrangements for the management and operation of the state owned nuclear sites was not clear. The 2002 White Paper had set a course for BNFL (and UKAEA) to move into the private sector, and potentially compete for the new contracts to operate the LMA/NDA sites (DTI 2002: 13). These are two very separate issues. Firstly, that the former state companies would be sold, and secondly that they then would be in a

position to compete, on a level playing field, with other private companies rather than demonstrating that they might merely continue to operate the sites if they were to improve. Indeed, the idea of public sector even being able to bid was not on the table

> "The Government does not consider that it would be appropriate for UKAEA as a public sector body to compete for additional site management contracts against firms from the private sector." (DTI 2002: 50)

BNFL, comprising mostly of the site management contract for Sellafield, but also research activities, uranium processing and other various companies, was to become a private entity as one company[4] either through sale or as a public-private partnership (DTI 2002: 5, 49).   The prospect of moving into the private sector for BNFL and the staff at Sellafield, while a significant change after decades of being publically owned, was not necessarily feared. The actual end result of the privatisation of the workforce at Sellafield (along with the rest of BNFL/BNG) was neither of the options which were originally planned. Firstly, the option of a public-private partnership was ruled out in 2006 by Mr Phil Woolas, Minister of State, Department of Trade and Industry in a statement to the House of Commons:

> "Public-private partnership was not pursued ... because BNG would not have the required critical mass" (HoC Deb 18 May 2006: C1179)

The remaining option therefore was the sale of British Nuclear Group (BNG) by BNFL, which was pursued. To aid the sale, and with little other option available to the NDA, BNG was granted a guaranteed initial five year contract to manage

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[4] Prior to this BNFL was restructured to facilitate this sale, with the overarching group being BNFL and the companies below it being British Nuclear Group, but these were merely internal organisational changes with no external effect.

the Sellafield site (Griffiths 2006). However, during the summer of 2006, the BNFL board decided to break up BNG and sell the assets off individually[5], forcing the NDA to accelerate their plans to let the contract for the Sellafield site (Parkinson 2006). The sale of BNG in its constituent companies ended the prospect of BNG becoming a globally competitive company in the nuclear decommissioning field. The remaining option for the NDA was to let the contract for BNG Sellafield Ltd to a private company, and this effectively ended the prospect of BNG competing for and undertaking work overseas (Griffiths 2006), which had been the intention since the 2001 White Paper:

> "What is now important is that BNFL's management and staff have the opportunity to deliver on the good work already begun to improve the company's performance... and demonstrate that it can continue to compete successfully in the global market place." (DTI 2002: 49)

The move to find a private-sector owner of Sellafield by competition – precipitated by "the change in strategic approach by British Nuclear Fuels Limited (BNFL) regarding the future of British Nuclear Group Sellafield Limited (BNGSL)" (NDA 2007: 32) – which had led the NDA to "agree and favour an early competition for Sellafield" (NDA 2006: 151). Rather than have to sell BNGSL as was planned for the other parts of BNG as part of a competitive sale process, the option was taken to bring forward the five year contract competition to find a parent body organisation for the Sellafield site.

For SLC contracts, which are "typically high value, high risk" contracts, the overarching aim is to maintain and enhance the capability of the SLC as an

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[5] This was due to fears that the private companies interested in BNG, principally Fleur and Bechtel from the United States, were planning to buy BNG and then break it up themselves, making a significant amount of money (Parkinson 2006)

enduring entity (NDA 2011a: 2.2) which aids later re-contracting and the operation of the sites. However, ownership of the SLC is intended to give the necessary level of control to provide the "direction, leadership and management" (NDA 2011a: 2.2) to implement significant change as envisaged by the PBO/SLC model (NDA 2013a: 9). The NDA contracting principles actively encourage a significant level of control for the PBO over the SLC. Three of the seven principles are relevant. The way in which contracts are let, particularly the high value and high rick critical contracts for site management, is intended to give the longest possible term and greatest possible freedoms within the constraints of ensuring operational endurance of the SLC. The contracts thus have long durations and wide scope, specifically to give the PBO the greatest level of influence over the SLC:

1	Incentivise delivery of outputs and performance. This means contracting for key deliverables (the 'what') which **allows the supplier wider scope** to find more effective and efficient solutions for delivery (the 'how');
2	Incentivise long term SLC thinking, planning and delivery through **letting of longer duration contracts** or incentivise multi-year performance for existing annualised contracts. This will allow the supplier to address longer term perspectives and avoid short-term solutions.
7	Encourage innovation and transfer of best practice. **Incentivise knowledge transfer and sharing from parent companies**, across the NDA estate and wider supply chain.

Table 5.1 – Three of the seven NDA Contracting Principles (NDA 2011b: 2.3)

To incentivise the delivery of the contracting principles, the NDA employs what it terms "Trust with Consequences", which means that by default both internally

and externally its stakeholders and suppliers are given "the responsibility, autonomy and authority within delegations to deliver the required performance in the way they see most appropriate" (NDA 2011b: 2.4). The clear implication of the NDA approach to contracting and incentivisation is to give as great a scope as possible to the contractor in the day-to-day operation of their contracts for the longest practical time. In seeking to create and sustain a demand from suppliers to participate in the market for clean-up contracts, these principals and incentivisation methods make sense. Suppliers are more likely to bid for contracts where they are given certainty as to the funding. However, the wide scope granted by ownership and secondment of the senior management leads to a greater uncertainty in the specifics of the delivery of the contract and the way in which sites are managed.

As explored earlier, the primary aim in moving to public ownership and private management though competitive contract tendering was to bring outside expertise to bear upon the complex problem of nuclear decommissioning. Innovation would then lead to cheaper, in time and/or cost, decommissioning of sites. The key mechanism by which innovation is deployed and costs reduced are the new organisations (and their people) bringing new ways of working. This means that significant change at nuclear sites and within SLCs is a desired effect of the contractorised governance arrangement for the nuclear legacy. This means that the model intends significant change for the workforce and by extension, given the isolated areas in which nuclear sites are located, change for the wider community too.

Harold Bolter (a former BNFL director) recognised that the geography of West Cumbria had an effect on the management of the Sellafield site. Over the

course of a number of years, the site and the area had grown accustomed to BNFL and vice versa:

> "It is still a hard two and a half hours drive away from Risley[6]. Getting to and from London was even more difficult…In this situation, it is easy for senior management at Sellafield to see them as separate…" (Bolter 1995: 45)

The senior management are replaced as the contract to manage the Sellafield site was transferred to private, potentially foreign companies. Given there were no plans that the wider workforce would significantly alter compared to what was already forecast by BNFL, local councils focussed their concern regarding the new model on the impact that change in senior management could have in the three local authorities join response to the NDA strategy in 2006:

> *"Whilst probably a relatively small number will be affected … they will often be people who are well assimilated into local society, and make a significant community contribution … facilitated by the attitude and encouragement of BNG … [a new contractor] may have a different attitude to their supporting their staff's engagement in local volunteering etc … which is one of the strengths of the west Cumbrian scene"*[7]

However, while it was only the senior management of the Sellafield site that were likely to be replaced, the wider workforce would still be affected by the contractorisation of the Sellafield site. The ambition for BNFL in moving from state ownership was for it to become a global provider of decommissioning services. This would draw upon the experience at Sellafield of

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[6] The location of BNFL's headquarters in Cheshire.
[7] Joint Response by Copeland and Allerdale Borough Council and Cumbria County Council to the NDA 2006 Strategy

decommissioning reactor, fuel reprocessing and waste treatment plants. The outlook for Sellafield would have therefore been one of going out to the world. In this scenario, the staff would have been an asset to BNFL. However, in the contracted model the staff are a transferrable asset of the site licence company. Given the short term contracts (5-17 years) there is little incentive for the parent companies to view the staff, who do not and will not ever work for them, as an asset in the long-term. This created potential problems, some envisaged in the original 2002 White Paper, relating to the training of the workforce for example, which stated that the LMA must:

> "ensure through our site contracts that contractors continue to train and reskill their workforces, thus promoting both sustainable employment and the maintenance of high levels of marketable skills" (DTI 2002: 84)

Of course, there is a less than altruistic reason for the LMA/NDA to incentivise the training of the workforce – they are central to the safe and cost-effective operation of the state owned sites, and the contracts and staff do have to at some stage be re-let and transferred to another parent company. However, in the same white paper the incentive to retain a trained workforce is specifically linked to the potential for the companies in the UK to be "credible and competitive players for clean-up work" (DTI 2002: 54) where "a stronger nuclear skills base can only increase the competitiveness of UK firms overseas" (DTI 2002: 77). However, this was written in the context of a less rigidly applied procedure of contractorisation of every nuclear licence site, where the existing state companies may have been able to compete for work, rather than the breakup and sale of every state operator which occurred. The implication for

staff is that, whereas BNFL was looking to take forward opportunities to decommission sites, particularly in the Former Soviet Union countries, following competition, these opportunities would lay with the PBO companies. The workforce at Sellafield and other sites would not be the beneficiaries, necessarily, in the context of multi-national ownership.

5.3 - Sellafield: The Fall and Rise of State Management

The contractorisation of the management for nuclear sites which may, like Sellafield, be significant in the social and economic life of their communities, clearly gives a huge scope to those private sector interests which would come in to the sites to deliver on the contract aims. Unfortunately, the contracts themselves for each site are commercial in confidence, so it is not possible to actually see the contract. However, the Sellafield case went through the 'new' model and came back to nationalised management over the course of eight years, to public scrutiny in parliament and government. This journey highlights important issues for power in West Cumbria, as explored in general terms in the previous section.

The competition for the Sellafield contract involved nine large multi-national companies submitting four different bids (one single and three consortia bids) and in 2008 Nuclear Management Partners took ownership of the Sellafield site. The organisation had its contract extended in 2013 after the first five year period of an up to seventeen year contract, and then in 2016 that contract was terminated and the ownership and management of Sellafield Ltd transferred back to the NDA. It is not my intention to provide an account of the

performance of NMP at Sellafield[8], which would not contribute to the aim of this thesis. However, there are specific issues in the way in which the site operated and the reasons for the contract being terminated which are important for understanding why the governance model for the nuclear legacy failed at this site and rescaled power again.

At Sellafield, up to the change of ownership in 2008 the site had been owned and operated by companies owned or directly controlled by the UK government. Initially the United Kingdom Atomic Energy Authority, then British Nuclear Fuels. Following changes in 2005 the site became owned by the NDA, and the site licence company (i.e. the workers and movable assets) became owned and managed separately by a Parent Body Organisation (PBO). In the case of Sellafield a new company, Nuclear Management Partners (NMP), was set up specifically for the purpose of bidding for the Sellafield contract in 2008 by a consortium of large multi-national companies, which are URS from the United States, Areva from France and AMEC from the UK.

As explored in general earlier in this chapter, specifically at Sellafield the contract for management was supposed "to improve performance through innovation, greater incentive arrangements and a higher risk/reward profile" (NDA 2006: 63). For the NDA the contractorisation would bring "UK and international best practice to bear on our mission" by "specifying the outcomes we seek rather than the work to be performed and rewarding cost effective delivery" (NDA 2011b: 13). As such, the operator is paid a fee based on meeting targets for programme delivery and shares any efficiency savings achieved on the budget with the NDA. However, the structure of the contract

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[8] For NMP's account of their record see Nuclear Management Partners website, and for their failings see KPMG (2014), PAC (2012; 2014) and NAO (2014).

between the NDA and the parent body which incentivises efficiency savings has been problematic. For the parent companies the focus on cost reduction as a means to increased earnings has not been a great success either, with "undesirable consequences" on the site which have resulted in a "lack of focus on schedule performance, particularly for major projects" which "ultimately cost more than the efficiency savings" (KPMG 2013: 110). The rationale, to bring "managerial and technical expertise and a private sector mentality" (KPMG 2013: 21), certainly brought a private sector mentality – the operators focused on making as much money from their contract as possible, which is their duty to their shareholders

There have been both cost reductions and cost increases as a direct result of the post-nationalisation of the management of Sellafield, which are specifically explored in the next chapter. The site has attracted criticism for spending money on staff from overseas. In one specific case, the 'Reachback' scheme brought staff from the parent companies (in particular from the United States) with the aim being to bring their expertise to bear upon the challenges of decommissioning and thus make the process faster, safer and cheaper. However, in a review of risk management at Sellafield, the Public Accounts Committee of the House of Commons found that the £17 million per year "costs of seconding staff from Nuclear Management Partners' parent companies appear excessively high, especially given the wage rates in the local economy" (PAC 2012: 3).   The bringing of temporary 'outsiders' at great expense was resented locally, and as is clear in parliament too. This is significant as the Government recognised in 2002 that their new approach, 'creating a market' for decommissioning and clean-up services in the UK could only work as long as

the process was open and transparent, and where the public were confident that it was the best option for handling the nuclear legacy:

> "The LMA will be publicly accountable for its performance and operate on an open and transparent basis. It will be judged not just on its operational performance and cost effectiveness but also on its **ability to command public confidence.**" (DTI 2002: 13)

While NMP took the fall, it is clear that the contract drawn up and managed by the NDA was significantly to blame for the issues at Sellafield, the transfer of wide-ranging, ill-defined powers, through a contract incentivised in ways which had unintended consequences, to a conflicted group of seconded senior executives led to the loss of public support for the contract model at Sellafield among both the public locally, but crucially among those in positions of authority such as the parliamentary public accounts select committee. The return of that contract to the NDA, in its infancy at the time of writing, has however raised a whole new array of issues for the scaling of power in west Cumbria. The 'direct rule' by central government through the NDA is by no means a return to the BNFL days. In their own way, BNFL was a very arm's length organisation, particularly at Sellafield (Bolter 1996: 45).   The direct ownership and management by the NDA of the Sellafield site transforms the status of the SLC and its holdings. The status of assets, raised previously in relation to the workforce, changes when they become a direct part of central government. The change in ownership, which occurred on 1st April 2016, has not at the time of writing had much chance to alter practice at the site. However, there have been some indications of how this new relationship has impacted the location of power, in a centralising way.

Old model

Government
(Department of Energy and Climate Change/ Treasury)

↓ Policy and funding limits

Nuclear Decommissioning Authority

→ Contractual incentives

Parent Body Organisation
(Nuclear Management Partners)

Strategic objectives ↓

↓ Operational control

Site Licence Company
(Sellafield Litd)

New model

Government
(Department of Energy and Climate Change/ Treasury)

↓ Policy and funding limits

Nuclear Decommissioning Authority

↓ Strategic objectives

Site Licence Company
(Sellafield Litd)

Figure 5.2 – Contrasting old and new models of Sellafield ownership and operation

5.3.1 - New model – 'Market Enhanced SLC'

The formal case for change in the model for the operation of Sellafield was made in a letter dated 17 December 2014 from John Clarke, the Chief Executive of the NDA to Stephen Lovegrove, the Permanent Secretary of the Department for Energy and Climate Change (DECC) to seek ministerial approval for the model change. The letter covers the issues with NMP, the problems of the complex Sellafield site, the new model, alternative options and other justificatory details. The move to a new model of governance for

Sellafield is significant in what it says about the previous model, and the implications for the future for Sellafield and West Cumbria. There are three key themes in the letter which are relevant here:

- The performance issues of the old model;

- The importance of public confidence; and,

- The future governance of the Sellafield site.

The aim of old model, as covered earlier, where a parent body organisation owns the site licence company, was to bring outside expertise and private sector discipline to bear on the complex issues of decommissioning. Classic New Public Management, but it also suffered the same classic fate of much of the changes associated with New Public Management approaches public service delivery, a technique and orthodoxy more rigid than anything which came before and which takes little account of differences (Farazmand 2006: 368). Over time the PBO model has, slowly, been changed at a number of sites, in fact remaining only in its original form at the "small scale" and "simple" LLWR site (Clarke 2014: 2). For these sites where the PBO model has worked or been able to be modified the scope and task to be performed are specifiable and the SLC itself has not major capability issues as Sellafield has (Clarke 2014: 2).

At Sellafield the experience of the PBO model was, as explored earlier, poor. The actual performance of the contrast is not in itself interesting to this thesis, but some of the detail as to why the model was a failure are. From the outset, the NDA found it impossible to manage the PBO as well as it anticipated. As an example, the competition process by which the four potential PBOs were evaluated resulted in commitments being made which the NDA found were not

able to be transformed into contractual commitments[9], and as a consequence these were not delivered (Clarke 2014: 5).   The issue this confirms, one which was explored in abstract earlier when considering the PBO model for Sellafield, is that significant power is transferred to the private sector without satisfactory control.   Indeed, the conclusion of the NDA was that to transfer the entire scope of the operations of a site as large as Sellafield violated "good commercial practice" as the NDA has a sole purpose, to decommissioning its sites and Sellafield Ltd also has a sole purpose, carry out the NDA mission at Sellafield, but the PBO was only aligned with this in so far as it could be specified in a contract, which as has been seen, was not always possible (Clarke 2014: 5). The result was a private sector body operating with little recourse to effective management from their client – the government.

The old model was recognised by the NDA to lead to a situation where, despite secondment being seen specifically as a way to avoid this problem by making individuals "SLC staff for legal and employment purposes" (NDA 2013a: 7), the executives brought in by the PBO to Sellafield had spit loyalties:

> "the leadership team will be SLC employees rather than secondees … whose loyalties are evidently to Sellafield Ltd rather than to a third party organisation [and] SLC staff are more likely to get behind a leader from their own company rather than a leader seconded from elsewhere and this respect and support is key" (Clarke 2014: 6)

The original 2001 White Paper was clear that the new approach to creating a market could only work so long as public confidence was maintained (DTI 2002: 13). In the case of NMP and Sellafield, the NDA considered that as a

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[9] Unfortunately, the original commitments and the contracts are unavailable due to their commercial sensitivity.

combination of poor performance and issues more inherent with the model considered here "stakeholder dissatisfaction … has reached a critical point" (Clarke 2014: 8) and change was unavoidable. The new model (see figure 4.2), while seeing Sellafield return to direct ownership and management in the public sector, does not see an end to private sector involvement. Indeed, for the NDA "private sector approaches and disciplines will add value" (Clarke 2014: 3) but through a "conventional" approach rather than the "bespoke PBO model" (Clarke 2014: 4), where the private sectors is engaged below the level of the SLC, rather than above it as either a 'strategic' or 'programme partner'. These are two new types of role where the strategic partner is aimed at addressing site wide organisational capacity deficiencies, a role which is established in large scale public projects – see Crossrail – but for the Sellafield site the programme partners are more specifically interesting, not actually for their role but for what they signal for the site. Specifically, the new model seeks to disaggregate the site into "separate major programmes" (Clarke 2014: 4) and acquiring programme partners in these areas. This means, in essence, the breakup of the site which was so opposed when BNFL was being broken up in 2006, as summarised by local MP Jamie Reed in the Commons:

> "I could not support the break-up or carve-up of the Sellafield site. That has been done before – notably by BNFL during the 1990s – and it resulted in a deterioration in working practices and managerial accountability structures" (HoC Deb 18 May 2006, C1175)

The new model is still in its infancy. At the time of writing neither the strategic partner nor the programme partners have been identified and no disaggregation has actually occurred. The direction for the site is however clear; smaller units operating more independently within the overarching site. The potential for

differential terms and conditions, opposed in 2006, is real. Indeed, a key

element of the new model is "workforce reform" (Clarke 2014: 5). New terms

and conditions are being introduced which include lower pay and longer hours

for new starters as well as other internal changes to pay, grading and so on

(Sellafield Ltd 2016b: 26).   The driver for this change is twofold: firstly, there is

the imperative to reduce costs and increase productivity; secondly, and more

significantly, the status of the site as a wholly owned subsidiary of the NDA

places exemptions which Sellafield has to wider public sector pay and

conditions standards are placed at risk[10]. The outline business case for the

transition recognised that "increased proximity to government in the market

enhanced SLC model" placed these exemptions at risk (NDA 2014b: 78).

Specifically, the exemption on remuneration and pay was based on the private

sector ownership (NDA 2014b: 78). The specific case made for these

exemptions to continue is redacted from the business case, but the implication

is that these exemptions were only allowed on the basis of workforce reform:

> It should be clear that the NDA is not seeking any further exemptions
>
> than those currently in place, and we fully understand the need to
>
> improve efficiency at Sellafield, including through workforce reform,
>
> **which the NDA has committed to carry out within three years of**
>
> **model change** (Clarke 2014: 5)

The new model, in bringing the site out of private ownership and into a closer

relationship with government than it even had in the days of BNFL has therefore

significant implications for the workforce, and consequently the wider

community. The potential changes of workforce reform will be, as the local MP

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[10] These are specifically the Expenditure Review Group (ERG) Controls which aim to reduce wasteful government spending, the public pay policy which deals with public sector workers' pay, and the caps placed on senior executive remuneration

Jamie Reed argues, "significant" and have a "ripple effect" due to the dominance of the site in the total local workforce (Sellafield 2016b: 37).

The model change has affected the way in which supply chain procurement is presented. Issues relating to supply chain procurement, in particular a perceived the lack of local procurement, is a long-standing issue for the local area (Whitehaven News 2015).[11] One effect of the model change has been in to emphasise value for money for the wider UK taxpaying public. In its procurement strategy, Sellafield Ltd argues that as it is funded by the UK taxpayer there is consequently an obligation placed on Sellafield to base decisions on what achieves the greatest "value for money for the UK taxpayer" at large (Sellafield 2014: 3). An example can be drawn from one procurement decision made after the model change where a local supplier lost a contract to a national bidder. This was justified on the grounds that:

> "Sellafield Ltd is *owned by the UK taxpayer* and we have a duty to seek value for money in the contracts we let" (Whitehaven News 2016, emphasis added)

The actual behaviours have not necessarily changed in supply chain procurement, and at the time of writing it is too early to tell given many contracts take significant amounts of time to award. However, it is interesting that the status of the site as wholly owned company is invoked for the first time in public. The rescaling of the ownership of the site has had both concrete impacts to terms and conditions, but the model change has also altered how the site presents itself and its actions to the local community.

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[11] Whether or not the support given to the local area is 'fair' is a substantial question which is not in the scope of this thesis, but the perception of what the community feels it is 'owed' for hosting Sellafield is addressed in the next chapter.

5.4 - Geological Disposal of Radioactive Waste

This section is not intended to analyse several phases of policy towards the long-term disposal of radioactive waste, but rather to explore the key differences between each which are relevant to the issue of the scaling of power in west Cumbria. In order to achieve this it is necessary first to very briefly outline each of the three recent phases and their key features as they relate to the issue under examination. There have been three different attempts to find an underground disposal site for the most radioactive wastes in the UK since the 1990s; the' Nuclear Industry Radioactive Waste Executive' (NIREX) in the 1990s, 'Managing Radioactive Waste Safely' and the Nuclear Decommissioning Authority's Radioactive Waste Management Directorate' in the 2000s and early 2010s and most recently 'Implementing Geological Disposal' and Radioactive Waste Management Limited from 2014.

The attempt by NIREX to find a site for the disposal of wastes began in the 1980s with the publication of a series of white papers and the attempted pursuit of potential sites in Lincolnshire, Humberside, Essex and Bedfordshire which were ultimately unsuccessful and abandoned in 1987 (Hetherington 1998: 19). Following this experience NIREX committed to an open and transparent process, where the details of its site investigations would be public, but contrary to that commitment in 1989 following a shortlisting of sites, two remained, Sellafield in Cumbria and Dounreay in Caithness which became just Sellafield in 1991 (Hetherington 1998: 19). Issues with the study of geology with boreholes alone led to the application by NIREX for permission to construct a 'Rock Characterisation Facility' near Sellafield, which was the subject of a public inquiry in 1995/96, but this was ultimately rejected by the Secretary of State in

1997, with a particular focus on the deficiencies in the site selection process noted by the Secretary of State as a major contributory factor in his decision to refuse permission (Hetherington 1998: 27). Murray (2003) for the International Atomic Energy Agency summarised the issues with the NIREX approach, where in the years leading up to the public inquiry the process was not transparent, was not developed in consultation with all interested and affected parties, did not have clear decision points, did not explain how decisions had been taken and did not provide opportunities for interested and affected parties to provide inputs.

The Managing Radioactive Waste Safely policy, began in 2001, resulted in the publication of a white paper in 2008, which took into account the issues with the NIREX approach, and resulted in a very different policy. The key difference was that in the new policy "…communities voluntarily express an interest in taking part in the process that will ultimately provide a site…" (DEFRA 2008: 47). This led to a five stage process, where local 'Decision Making Bodies' (i.e. councils) make an "Expression of Interest" to government in taking part in without commitment discussions with government and initial geological screening (DEFRA 2008: 7). Following this and each state the Decision Making Body would have to vote to continue, with each stage gradually narrowing the search for a site within the area, with a final vote before underground works began on the repository (DEFRA 2008: 7). Three decision making bodies made an 'expression of interest' to government – Copeland Borough, Allerdale Borough and Cumbria County (for the areas of the Copeland and Allerdale boroughs) – which all voted on participation in stage four on 30th January 2013. The two borough council executives voted to proceed and the county council voted against proceeding. The county council cabinet which voted on the

decision to not proceed to stage four did so by a 7 to 3 majority, with the majority of its councillors representing divisions outside the proposed search areas in Copeland and Allerdale[12]. The vote by the county council led government to terminate the MRWS process in west Cumbria (DECC 2013). While committing government to continuing with the approach set out in the MRWS policy, it was never revived and a new approach was published the following year.

There are great similarities in the approaches taken in MRWS and the more recent (and still current at the time of writing) process for finding a site for the underground disposal of higher activity radioactive wastes, but there are some key differences. The principal of communities volunteering remains as the method for the initiation of the process, but the staged decision making model is removed and the timings of key decisions is reordered slightly and a new innovation – the 'test of community support' (DECC 2014: 27) – is introduced. The updated framework, accounting for lessons learned from the abortive MRWS process, introduces desk-based national geological screening of the type done for potential host communities following an expression of interest in the old process (DECC 2014: 29). Government believed the old process "overly prescriptive about procedural arrangements" and instead of staged decision points, allows councils to vote to end the process at any time prior to the submission of a planning application to the National Infrastructure Planning Commission (DECC 2014: 30). The process to be followed locally makes no mention of the requirement for both local authorities in two-tier areas (such as Cumbria), and does not elaborate on what the "test of public support" might look like in terms of process and scale (DECC 2014: 44). In both the case of the

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[12] I attended the Copeland meeting as a councillor and watched live coverage of the Cumbria County Council meeting.

MRWS process and this modified process government "reserve the right" to "explore other approaches" should the process look "not likely to work" (DEFRA 2008: 47; DECC 2014: 31). In both cases too there are unspecified community benefits to be negotiated with a host community for providing "an essential service to the nation" (DEFRA 2008: 6; DECC 2014: 45).
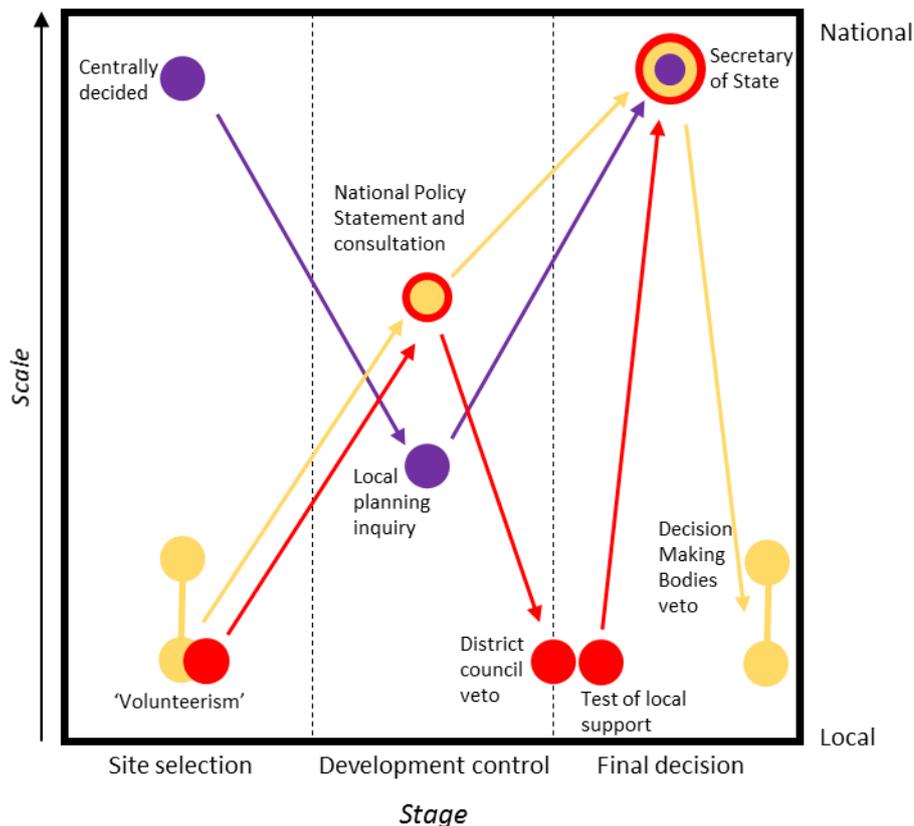
Figure 5.3 – The scaling of key points in the three most recent higher activity radioactive waste siting processes (Purple = NIREX; Yellow = MRWS; Red = Implementing Geological Disposal)

The most significant changes to have occurred are summarised in the three stages in the diagram above. They are the selection of a site, the way in which development consent is undertaken and the making of the final decision to proceed. The volunteerism approach in principle opens the whole site selection process up to a wide range of potential communities, however in practice it

ensures that areas with existing nuclear facilities come forward of their own accord. This is an established trend in other radioactive waste siting processes across the world. The desire to host a disposal facility for highly radioactive wastes is not common, demonstrated by the lack of any other communities, especially those not near to an existing nuclear site, coming forward – a characteristic common of many radioactive waste siting processes around the world (Bickerstaff 2012: 2616). Therefore, in practice, the approach to site selection based on volunteerism has the effect not of broadening the number potential sites but overcoming any suggestion of imposition by the state and a lack of transparency in the initial site selection.

The changes to the development control stage are not unique to radioactive waste, but common provisions of the Planning Act 2008 which apply to many types of infrastructure, such as power generation and transport. The move from local planning inquiries to consultations has been explored in detail in relation to nuclear power developments (Johnstone 2010; 2014). It is argued that the rescaled public participation from a set-piece showdown at a planning inquiry, where the scope is open to alteration, to the strict separation of issues and their confinement to different scales (such as local consultations considering only local issues) has "diminished the 'political opportunities' available for certain nongovernmental actors to intervene in the policy process" (Johnstone 2014: 697). These alterations to public participation in the planning process are symptomatic of the "post-political and the post-democratic" turn in governance, in which the idea of a process structured around competing visions is superseded and debate becomes "reduced to managerial and technocratic particularities" such that experts hold the greatest sway and nuclear developments become "an 'inevitability'" (Johnstone 2010: 91). This is not to

say that planning inquiries were ideal and their failings are multiple and well known, such as being exclusory of non-experts, but they at least allowed for actors and issues from a range of scales to coalesce unofficially in a way that has been structured and confined out of existence by the Planning Act 2008 (Johnstone 2014: 699). In the case of nuclear waste in the UK, the planning inquiry in 1995/96 was successful in having the NIREX application for a Rock Characterisation Facility refused by the Secretary of State. Achieving this was in part down to the combined efforts of NGOs, such as Friends of the Earth, and both local authorities, Cumbria County Council and Copeland Borough Council, coming together in the inquiry to oppose the permission in the face of NIREX' vastly superior financial resources (COWAM 2001: 17). The MRWS case, on the other hand, never reached the stage of a development consent and that remains an upcoming development under the current process. However, it is clear that a planning inquiry can be more empowering of an array of interests than "UNCLE—Unlimited Consultation Leading to Exhaustion" may be in the new planning process (Johnstone 2014: 705).

The change to the final decision point between the NIREX experience and the subsequent policies does introduce a significant local 'safeguard' on the development. In the MRWS policy the local decision making bodies had the right to withdraw up to the point "when underground operations and construction are due to begin" (DEFRA 2008: 56). Following on from this "final opportunity" to exercise the right to withdraw the site would be further characterised and subject to regulatory and planning approval (DEFRA 2008: 65). The MRWS white paper was published at the time the Planning Act 2008 was a bill going through parliament, and the policy was based on the assumption that this would become law and be the planning regime under which a geological disposal

facility would be granted permission (DEFRA 2008: 43-43). This means no planning inquiry. This is the process to be followed for the current policy towards radioactive wastes, and to that end the government amended the Planning Act 2008 with a statutory instrument, The Infrastructure Planning (Radioactive Waste Geological Disposal Facilities) Order 2015, which amended the list of 'Nationally Significant Infrastructure Projects' to include "development relating to a radioactive waste geological disposal facility" (Infrastructure Planning Order 2015: 1). The Implementing Geological Disposal policy does however alter the timings of the elements of local consent and planning applications. While the MRWS policy had the planning application prior to, or alongside, the planning application, the new policy most specifically places the last point of a local right to withdraw "any stage in the siting process leading up to the test of public support" which if positive would allow the developer to apply for "planning consent for a GDF, and other permissions to proceed from the environmental and nuclear safety and security regulators" (DECC 2014: 44). The test of public support is the most novel element of this current process, and while its timing prior to a planning application is clear, the actual mechanism is not proscribed in the white paper, as "the precise mechanisms and timings for this will be informed by the recommendations of the community representation working group" (DECC 2014: 44). The final decision "will not be taken until, and unless, there is a positive test of public support for a GDF at the site in question" (DECC 2014: 45). However, the significant issue for Cumbria County Council's cabinet in ending the MRWS process was that the Right of Withdrawal was not legally binding on government (BBC News 30 January 2013) and this remains the case.

The experience of the changes to radioactive waste policy over these years points out two particularly significant changes, which are the alteration of the site selection process and also the way in which consent for a site is granted. These changes have been brought about with the sole aim of securing geological disposal of radioactive wastes. The potential to challenge the construction of such a facility has, in the design of these policies, been given two significant hurdles. The first of these is related to and builds upon the planning regime changes already discussed. Opposition to nuclear power in the UK in the 1980s, which coalesced around the public inquiry into the Hinkley Point B reactors, was although unsuccessful in that specific development, delayed the facility by being able to consider issues of need and suitability of nuclear power by broadening out the scope and scale of the inquiry (Johnstone 2014: 703). However, Geological Disposal being a settled method, there is not the opportunity to question formally the nature of the facility being proposed. That decision was taken and settled well before 2008, when between 2001 and 2006 an expert committee, the Committee on Radioactive Waste Management (CoRWM) published their recommendation that "geological disposal, preceded by safe and secure interim storage, was the best available approach for the long-term management of higher activity radioactive wastes" which government accepted (DEFRA 2008: 10). This in effect closes off one significant route to argue and affect the development of radioactive waste disposal.

The second change which is very significant, and occurred following the MRWS process failing to proceed in West Cumbria due to the opposition of Cumbria County Council, is the removal of the requirement for both local authorities in two tier areas to agree for a site to go forward. The NIREX site selection choosing Sellafield was not unsuccessful because of a lack of public support

near the proposed site, which was positive close by and diminished with distance (COWAM 2001: 24), but because local government opposed the scheme in conjunction with NGOs at the planning inquiry as explored earlier. The same could be said for the MRWS process, where public opinion towards going on with the site selection process was overwhelmingly positive in West Cumbria but diminished with distance, such that net support was +45% in Copeland, but only +14% in Allerdale and +16% in the rest of Cumbria (Ipsos MORI 2012: 3). The simplification of the site selection process, such as removing both staged decision points and the need for upper tier local authorities' participation, aims to give greater "confidence in the process to deliver this nationally significant infrastructure project" (DECC 2014: 6). It can hardly be ignored that this occurred following two siting attempts in which Cumbria County Council played the leading role in their early termination and Copeland Borough Council had made clear its willingness to 'go it alone' in the MRWS process (BBC News 30 January 2013).

The experience of the repeated rescaling of policy towards radioactive waste disposal is one of repeated attempts by developers and governments to find a site, which is understandable given the danger posed by long-term storage of highly radioactive wastes in ageing facilities at Sellafield and around the UK. In each new policy and process, lessons from the failure of the previous policy were learned and changes in the next reflected that. Examples highlighted here include the greater transparency in the site selection through volunteerism and the end of planning inquiries from NIREX to MRWS, or through streamlining the multi-level governance of the process following MRWS. The only community under discussion or willing to come forward to discuss the possibility of hosting an underground radioactive waste facility has been West Cumbria. While in the

NIREX case the local borough council did oppose the scheme, it was not on the principle of objecting to a repository but to the process NIREX followed (COWAM 2001). Indeed, public opinion locally towards the nuclear industry and towards specific radioactive waste facility siting schemes has been positive (COWAM 2001: 24; Ipsos MORI 2012: 3). In each case then the policies have altered after west Cumbria proved unsuccessful, then re-entered and proved unsuccessful again. Government clearly do not wish to predetermine any site, but they have clearly worked to make sure that the area can keep coming back and have a greater chance of getting further each time.

5.5 – Discussion: Political projects with scalar implications

The need for a new model to replace BNFL and UKAEA to manage the nuclear legacy stemmed from the desire not only to save money (NDA 2006: 6), but to bring expertise and capabilities that the government believed it did not possess itself to address a complex problem and "benefit all aspects of site clean-up, improving safety and environmental performance as well as outcomes, reducing timescales as well as costs" (DTI 2002: 33). The NDA blamed the subsequent failure of the transfer of ownership of Sellafield Ltd on the difficulty of managing such a complex site through contractual relationships (NDA) and incentives which had unintended consequences (KPMG 2012). The Public Accounts Committee highlighted the lack of risk transfer to the private sector under the PBO model as a significant issue which led to cost and time overruns which did not affect the PBO companies (PAC 2012). There was, basically, not enough incentive in the PBO model at Sellafield to perform well. For waste management the changes in policy have not had to deal with operational

failures, having never proceeded far enough. Instead, the inability of government or the nuclear industry to persuade West Cumbria, or any other area in the UK, to host higher activity wastes has been the driver behind policy change.

The changing governance of the nuclear legacy, despite the aim being to 'create a market' for nuclear clean up, is an example of Type II governance i.e. private provision organized on a contractual basis with central government, rather than market competition (Marks and Hooghe 2004: 25). This is demonstrated by shift from BNFL to the NDA which involved the move from government direct provision to contractual relationships with private sector companies where, despite not being a total privatisation, significant autonomy is granted (Marks and Hooghe 2004: 25). The result is a mixture of "specific competencies and local discretion" (Bulkeley and Kern 2006: 2239) evidenced by the freedom NMP had to pursue objectives which took focus away from the achievement of its main obligations (KPMG 2013: 110) which contributed to model change.

The involvement of both state and non-state actors in the ownership and management of the sites makes the boundary between public and private "blurred" (Allen 2004: 29) with decision making being split between the SLC, PBO, regulators, government and others between 'multiple centres' (Ostrom, Tiebout and Warren 1961: 831) and creating a "complex network" by which governance of the nuclear legacy is achieved (Marks et al 1996: 346; Kern and Bulkeley 2009: 311). This created a 'public service industry' (Ostrom and Ostrom 1999, 88-89) for nuclear decommissioning. In such an 'industry', authority is transferred as a discrete package of defined 'capabilities' (MacLeod and Jones 2007: 1187). As seen with the level of control the NDA and state

were able to exert over the Sellafield contract, indeed ultimately bringing it back under direct national control, the authority of the state itself was, however, never relinquished.

The ability for government to reorganise the governance of Sellafield however is revelatory of several key features and extensions of type II governance. Firstly, the "catalysts for governance" are diverse and include "wider social/political pressures" (Armitage 2008: 11) such as reports from parliamentary select committees, watchdogs and other sources which made the previous governance arrangements untenable as they lost the "public confidence" which was necessary for their operation (DTI 2001: 17). Secondly, the flexibility of task specific type II structures (Marks and Hooghe 2004: 28; Faludi 2012: 203) is demonstrated by the ability of government and the NDA to alter the governance model quickly with little apparent cost. Thirdly, while government has become dispersed, the notion that it is necessarily diminished as a result of the shift to governance is overly simplistic, but rather the central state remains strong and able to extend its power (Swyngedouw 1997: 142; Allen 2004: 27; Baker 2015: 250-251) evidenced in this case by the re-nationalisation of the management of the Sellafield site.

The practice of governance, as discussed, embraces a range of actors and institutions, and in any given type II governance configuration, each has their own strengths and weaknesses (Ostrom and Walker 1997: 36). The issue that is demonstrated by the Selafield site governance model failure is that an over-reliance on private sector actors as a catalyst for change was misguided. The state had to mobilise its "peculiar position [as] the actor of last resort" (Baker 2015: 250) to reorganise the governance architecture to embrace a wider array of policy tools than contractual relationships were able to.

These changes in two different areas of nuclear policy both highlight the importance of the range of policy tools available to government to achieve its aims. The 'tool of government' approach (Hood 1986; Hood and Margetts 2007) proposes a framework of four 'tools' by which government achieves change: nodality, authority, treasure and organisation (NATO). Nodality involves information and the ability of government to persuade. Authority is the ability for government to arrange, instruct and enforce structures and rules. Treasure based tools, or "chequebook-government" (Hood 1983: 40) involve government incentivising actions. Finally, organisation tools relate to the ability of government to provide directly through, amongst other elements of state organisation, its "stock of people" (Hood 1983: 6).

		NODALITY	AUTHORITY	ORGANISATION	TREASURE
SELLAFIELD	**BNFL**		*State managed*	*(Deficient)*	
	NMP		*Privately run*	*(Deficient)*	*Contracts and incentives (Insufficient risk transfer)*
	2016+		*State managed*	*(Deficient)*	*Private sub-contracts for specific aims with risk transfer*
WASTE	**NIREX**	*Deficient*	*(Imposed)*		
	MRWS	*Volunteerism & (Right of withdrawal)*	*(Threatened)*		*Community benefits package*
	2014+	*Volunteerism, Right of withdrawal & Test of public support*	*(Threatened)*		*Community benefits package*

Table 5.2 – Policy tools applied by decommissioning and waste management policies

For the different nuclear policy areas the range of 'policy tools' have varying significance, both in their application to achieve the stated aims of government and also in their role in undermining the achievement of those aims. For

nuclear decommissioning the 'stock of people' as defined by the expertise required to decommission the site was the primary deficiency that change from BNFL to the Parent Body model sought to address. The use of a contracted parent body was not successful as the contract was too complex to incentivise effectively. For waste management, the overreliance of the industry on their ability to define a site and successfully then persuade the local community drove the change from NIREX to MRWS. However, the lack of a legally guaranteed right of withdrawal and the remaining explicit threat that government could at any stage override local opposition led to further failure. For waste then the constant threat of government authority has been problematic, and other tools have been employed to persuade and incentivise communities to volunteer themselves. In short, in common with other policy problems, including attempts to revive the nuclear power industry (Baker 2015), management of the nuclear legacy reveals that policy tools are not mutually exclusive, but that they must work in combination to solve complex policy problems.

In the case of the privatisation of Sellafield Ltd and its renationalisation, this reveals the weakness of reliance on, and the need to combine, both treasure based and authority tools to overcome the deficiencies in its organisational capacity. Perhaps fittingly, it is the over-reliance on both separately that was problematic for two different governance arrangements. Where government in 2001 believed that BNFL lacked the capability to achieve their aims for the cost and time to decommission Sellafield and other sites, the recent model change revealed the NDA's opinion that the overreliance on a purely contractual and incentivised relationship with a private owner was insufficient for such a complex site as Sellafield. The new model, which brings the site back into public ownership but supplements that with both a strategic partner from the

private sector for site-wide deficiencies in capability and programme partners to work with the SLC on specific areas of the business.

The overreliance on and failure of the contractual, incentive based model for the Sellafield site, when contrasted with the success of that approach at other less complex facilities on the NDA estate, also highlights a common failure in the application of new public management approaches to governance – the failure of 'one size fits all' approaches (Ohemeng 2010: 456). Undoubtedly hastened by the breakup of BNFL, the rush to contract out the entire NDA estate can with hindsight be viewed as a mistake. The return now to a more nuanced partnership between the public and the private sector is in fact redolent of the spirit of plans for the public-private partnership approach for BNFL in the late 1990s and early 2000s. However, despite the management of the site being taken from a nationalised company (BNFL), to an international consortia (NMP), and back to a nationalised company (Sellafield Ltd), for the workforce and wider community there has been no return to the past. Scale is therefore only one element of this political project, invoked in specific ways to justify policy changes. MacKinnon (2011: 29) argues that political projects, which aim at controlling and influencing areas of policy and social activity, can have scalar implications, particularly when scale is strategically deployed by various actors to justify changes in policy. In both areas of policy towards the nuclear legacy scale has been deployed as a justification in altering policy and the geographies of power.
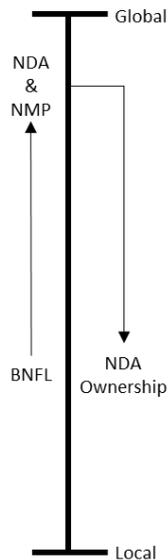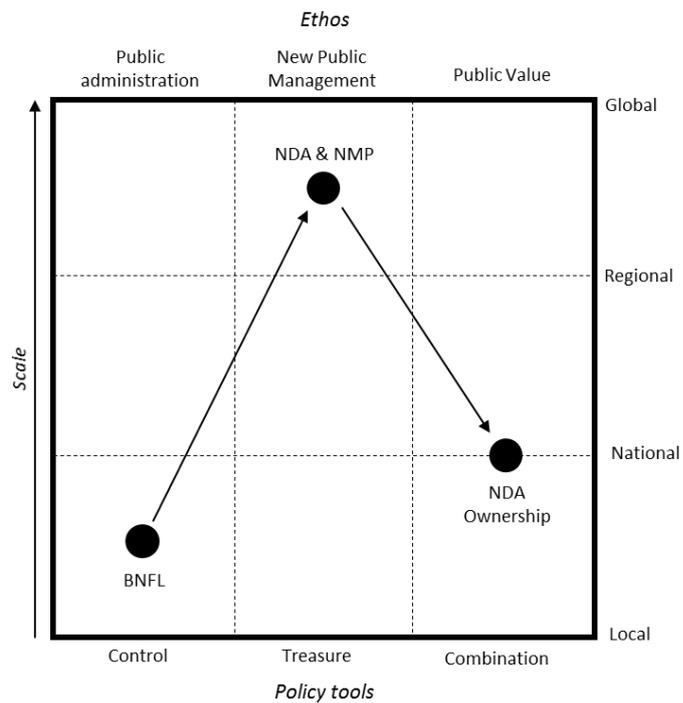
Figure 5.4 – Simplistic and complex representations of the rescaling of the management of Sellafield

The policy tools approach provides a succinct overview of the problems, and solutions, each new policy and structure sought to address for the management of the nuclear legacy. The lack of 'home grown' expertise in the decommissioning of Sellafield, and opposition towards attempts to site radioactive waste facilities in a centralised process were the two key challenges. International expertise and community volunteerism were (part of) the proposed solutions. These are scalar issues, as parts of political projects.

For the management of the Sellafield site, from the 2002 White Paper 'Managing the Nuclear Legacy' which started the process of change in the way the nuclear industry was governed, scale was invoked to justify the move to a

'competitive market' for decommissioning and clean-up. The key justification for the change was that a competitive global market for decommissioning would

> "…help to *stimulate innovation* and improvements in safety and operating standards and enable the LMA to make the best possible use of the best available skills." (DTI 2002: 13)

The implication being that existing skills were insufficient, compared to what was out there globally:

> "What is now important is that BNFL's management and staff have the opportunity to deliver on the good work already begun to improve the company's performance... *and demonstrate that it can continue to compete successfully in the global market place.*" (DTI 2001: 49)

The veneration of the 'global market' is a 'strategic deployment of scale' (MacKinnon 2011: 29) which invokes the global scale to justify privatisation of the nuclear site management. This framing also relegates the status of the existing workforce, who had until that point been led to expect they had internationally marketable skills, and in the new model became classified implicitly as deficient and requiring help. However, as expected in the processes of rescaling, change is not entire but rather demonstrates a path-dependency, where the existing structures are retained but novelty is added to what is carried over from the past (Brenner 2004: 11). In this case, the sites and the vast majority of the workforce were retained, but the ownership was transferred to the NDA, new management were added in by secondment to the existing organisation and the work carried out became specified by contract. The new structure therefore fundamentally rescaled the management of the site, which implicitly made the workforce simultaneously more global, working for a consortia of multinational firms, and more locally scaled, as no longer part

of an organisation seeking to compete globally itself. The status of the workforce is returned to in the next chapter.

The return to state ownership and management of Sellafield was brought about, as explored earlier, by the poor performance of NMP in terms of cost and delivery of major projects. These issues were comprehensively raised by reports from the National Audit Office (NAO 2012), private analysis of NMP performance for the NDA by KPMG (KPMG 2013), and both reports and public hearings of the House of Commons Public Accounts Committee which took place in both Westminster and West Cumbria (PAC 2014). The rescaling of the management of Sellafield once again was the result of the conflict between scale and territory.

Recognising that networks, territory, place and scale as different forms of socio-spatial relations do not exist in isolation avoids incomplete analyses (Jessop et al 2008: 396). Crises, and the resultant remaking of different 'fixes', are the result of successful or attempted re-ordering of the importance of the different dimensions of spatial relations (Jessop et al 2008: 397). For the management of the nuclear legacy at Sellafield the relative importance of territory, as multileveled government, and scale as differently scaled governance, changed from 2005 to 2015. There were two principal reasons for the national scale exerting greater control over the legacy management issue.

Firstly, national public spending became one of the biggest political issues after the 2010 election. During the 2010-2015 parliament, departmental spending was cut by, on average, 9.1% (IFS 2015). However, spending on the Department for Energy and Climate Change was one of only four departments to see an increase in its funding, by over 10% in real terms (IFS 2015), driven in part by the cost of the nuclear decommissioning programme not being able to

be reduced. It is particularly important then, when education and other public services are seeing funding reduced, that value for money is demonstrated. This is where the second change in circumstance drove rescaling of management at Sellafield; parliamentary select committees changed hugely after the 2010 general election. Elections by secret ballot to select committees from 2011 has transformed their activities, making them no longer reliant on, or controlled by, party whips and consequently in a few short years they have become much more effective at scrutinising the executive (Hagelund and Goddard 2015); or to be more succinct, they now "never allow a good crisis to go to waste" (Russell 2011: 64). The newly activist Select Committee on Public Accounts was extremely critical of the expenditure at Sellafield, both in specifics and in the way in which the whole contract model precluded "maximising value for the taxpayer" where risk cannot be effectively transferred to the private contractor in one site wide contract (PAC 2012: 9). It was in the select committee that the conflict between the globally rescaled management of the Sellafield site and the imperative of the national state to achieve greater value given changed political and economic circumstances was played out. Existing scalar constructions are made and re-made at the point of interaction between existing and emergent projects and scales (MacKinnon 2010: 37). In this case, the emergent project of austerity and 'public value' at a national scale, and the old project of creating a market for nuclear clean up, conflicted and the management of the Sellafield site was changed, and rescaled, again.

For the disposal of radioactive waste, the political project, most strictly defined, is aimed at securing a site for an underground facility. Critics of the process say that the political project is actually aimed at securing local approval in West

Cumbria to host such a facility[13]. The process creates new scales of intervention, such as designating councils as decision making bodies, and establishing siting partnerships and other bodies. The scale at which questions are asked clearly, in this instance, has a bearing on the answer received. Local public opinion and experience of the MRWS process, suggest that Copeland, both the public and the council, is much more likely to support finding a site in their area. The exclusion of the county council from the Implementing Geological Disposal siting process, begun in 2016, could be interpreted as rescaling the decision making burden to exclude a less favourable political structure at a higher scale. The change has undoubtedly diminished future opportunities for political action to oppose geological disposal, should Copeland Council take part in the new process.

The issue of competing levels of government in the demise of the MRWS process is another example of the national state being unable to actually commit to rescaling its authority. While perhaps admirable of government to at least be upfront about the possibility, should volunteerism not work, that other options could be pursued (DEFRA 2008: 47). In one sense this is nothing more than a statement of fact, that government retains ultimate authority as explored earlier. However, the issue was not the statement of the obvious, but even within that reality the minimal effort put into making the right of withdrawal more than words in a white paper. This lack of commitment by central government to make even a partially binding rescaling of power over the right of withdrawal to a lower level of government caused the process to end prematurely.

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[13] On-line consultation responses on the change from the MRWS process to the Implementing Geological Disposal white paper contain this theme throughout – see www.gov.uk%2Fgovernment%2Fuploads%2Fsystem%2Fuploads%2Fattachment_data%2Ffile%2F298806 %2FRedacted_Consultation_Responses_from_the_Online_Tool.xlsx&usg=AFQjCNHnVhgpjcdNIbW8JxTrK BctI2caQQ&sig2=BoKvMqP8hj3SXyJ27R5Mjw&cad=rja

The solution to this problem for the Implementing Geological Disposal process is twofold. Firstly, the removal of an entire level of government from the formal process of withdrawal from a site selection process simplifies the multi-level government of the issue. Secondly, the introduction of a 'test of public support' (DECC 2014: 27) creates an entirely new scale for the governance of the geological disposal process, but one which is as yet undefined and dependent on the site pursued. The scale of the test of public support will be significant in influencing the outcome. Make it small enough and issues directly connected with construction, such as noise, nuisance and so on could dominate (Wylie et al 2016: 154). Make it big enough and potential benefits will not be important to a large number of those taking part (Wylie et al 2016: 155-156), opening up more possibilities for opposition and another failure for government. Defining the public eligible to take part in any test of support on the issue of a geological disposal facility is in essence creating a new scale of authority, which can be beneficial or problematic depending on both the scale and one's perspective. Given the changes made from the NIREX approach, through MRWS, and now in the current process, which all aim at the successful siting of a GDF, it is reasonable to assume that government will seek to craft this new scale to be the most potentially favourable public for the issue, and others to argue for a different scaling depending on their political aims. Territory thus structures new scales, which will be contested, both in an attempt to secure a political project.

The two major elements of policy towards the nuclear legacy – decommissioning and waste management – involve the complex interaction between power as territory (multi-level government) and power as scale (governance). However, despite both being important, rumours of the demise of central government are greatly exaggerated. With issues such as "borders,

security, sovereignty" and other quintessentially territorial issues rarely out of the spotlight, territory has undergone a "decline and rise" (Painter 2010: 1090).

5.6 – Conclusions

There is not one centre of authority in modern governance, rather it is dispersed across multiple locations and scales, moving up, down and outwards from the central state (Hooghe and Marks 2003: 233). These new centres of authority may take many forms, such as supranational structures of government, privatised forms of governance and more. For the issue of the nuclear legacy, the privatisation of the management of the sites through competitive contracts transferred significant capabilities (and thus authority) to the private sector. The transfer of the ownership of Sellafield ltd to Nuclear Management Partners meant that for the first time in its history, the Sellafield site and workforce were working for the private sector[14]. While the involvement of private contractors on the site and in the wider west Cumbrian economy is not novel, by the time of the competition for the Sellafield site it had become very dominant of the west Cumbrian economy.[15] The dominance of BNFL, combined with its status as a commercial organisation gave it a degree of independence, undoubtedly enhanced by the remoteness of the area from either BNFL's headquarters in Cheshire or ministers and civil servants in London. The changes begun in 2006-2008 with the competition for the management of the Sellafield site were therefore qualitatively different, and of a scale not seen in the area before. The changes therefore while not novel in the context of the wider economy, were novel for West Cumbria.

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[14] Despite the majority of the funding being from the treasury, except for the commercial reprocessing income, although this was not new income so still arguably public money.
[15] By some measures Copeland was the most public sector dependent borough in the UK (Reference)

A very simplified version of the governance arrangements for Sellafield and other NDA sites, as shown in figure 4.3, obscures a much more complex system of governance. Among the components not included are the formal roles of the treasury in funding, international bodies such as the International Atomic Energy Authority and the World Association of Nuclear Operators in standard setting, local authorities development control and some waste authorisation responsibilities, and others. In addition to these formalised organisations there are also informal elements which are also important, especially when considering an industry which relies on local support for its ability to operate (Blowers 2003: 71) and a system of governance which the works only in so far as it commands public confidence (DTI 2001: 17). In this context, the data explored in this chapter offers three key insights.

Firstly, suggestions that rescaling down to more local levels being more empowering while rescaling to more global levels being inherently disempowering of workers and communities is demonstrated here to be overly simplistic. An end to national collective bargaining, for example, is seen as part of the 'new authoritarianism' of the post-Fordist state as market-forces, and thus money, dictates the terms (Swyngedouw 2000: 69). However, as Swyngedouw recognises here, it is not the scale that matters, but the imperative. Rescaling bargaining to a more local level for the Sellafield staff was, at a time of public sector pay freezes, empowering for the staff, compared to the stringent requirements of being part of the national public sector wage bargaining in 2016. The rescaling of power through the privatisation and nationalisation of the Sellafield site, from national to global and back again, reveals the complexity of rescaling and the range of diverse, specific impacts that has. No

scale, is appears, has any inherent benefit in and of itself (Brown and Purcell 2005: 607).

Secondly, the networked rescaling of the ownership and management of the Sellafield site highlighted the tensions between place and space in the contemporary economy, where hypermobile elites interact and conflict with embedded capital and labour. The conflicted priorities of seconded staff from multi-national firms in their control of the implementation of government policy towards nuclear decommissioning demonstrates the difficulty of relying on market mechanisms to deliver public policy objectives. This leads on to the wider issue revealed in the exploration of the changes in the governance of the nuclear legacy, that solutions must be specific and appropriate to the problem, and the importance of a wider perspective on governance which recognises how the state achieves its aims.

As such, the third issue revealed in this chapter is that the governance arrangements which sought to create a market for nuclear decommissioning, and their subsequent failure at Sellafield, highlight the problems inherent in the application of one-size fits all solutions, common to the application of market mechanisms to public policy (Hood 1991: 3). Taking a longer-term view of the Sellafield site, it is demonstrated that although seeking to achieve policy aims through the private sector failed due to an inability to properly control the parties involved through market mechanisms, a simple change to state control does not offer ideal model as the experience and performance of BNFL demonstrated. Rather, the experience of the governance of the nuclear legacy highlights the need to draw upon a wide array of policy tools to effectively govern complex problems.

CHAPTER 6 – NUCLEAR COMMUNITY: DECOMMISSIONING AND WEST CUMBRIA

6.1 – Introduction

This chapter, through the analysis of focus group and survey data, analyses in detail specific changes which resulted from the change in governance of the Sellafield site in West Cumbria. The analysis of the survey data provides the context of a complex, contradictory local public opinion towards the nuclear industry. Despite overwhelmingly positive public opinion towards the industry in general, a significant minority and in some areas a majority of residents expressed a belief that West Cumbria does not see a great enough benefit from hosting nuclear sites. The issue of corporate responsibility, or lack thereof, of the Sellafield site is discussed. The chapter then analysis, through focus group transcripts, the changes made following the part-privatisation of the management of the site. The changes implemented by the new, private management, predominantly composed of executives from overseas, demonstrates the role of local elites in the exercise of significant economic power and suggests that they have interests to serve which are contradictory to the interests of their new host community. This has disempowering consequences for the community and results in issues for the local perception of the site and its management.

6.2 – Nuclear community

There's a kind of an unholy alliance in a way here in the fact that you've got a very dominant single industry but also in terms of geography there isn't an awful lot else without transport links, so I think there's a sense of identity that probably is related on a historical pro-nuclear perspective, because there isn't a lot else.[1]

An isolated area with a dominant industry and little opportunity to diversity. Public opinion towards the nuclear industry in West Cumbria, as the focus group participant alludes, is positive throughout West Cumbria and overwhelmingly so in Copeland (see table 6.1). However, while the industry is a large employer, and as a result average wages in Copeland in particular are extremely high (see chapter 2), there are challenges facing West Cumbria. There are areas of significant poverty, struggling local public services and high wages failing to translate into a thriving local retail economy.

	Favourable %	Neither or don't know %	Unfavourable %
West Cumbria (2012)*	60	10	30
National (2010)	34	23	41
National (1997)	23	18	58
West Cumbria (1996)	60	19	18
1996; 1997 (Wylie 2011); 2010 (Ipsos MORI 2010); 2012 (Ipsos MORI 2012) * Support for the continuing the process to find a site for the most hazardous radioactive wastes in the area			

Table 6.1 – Public support for the nuclear industry at national and local levels

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[1] 02/12/2013 Copeland Borough Council

Do you or does someone in your household work in the nuclear industry? * Nuclear Opinion Crosstabulation

			Nuclear Opinion		Total
			Pro Nuclear	Anti Nuclear	
Do you or does someone in your household work in the nuclear industry?	Yes - at Sellafield	Count	146	5	151
		% within nuclear household	96.7%	3.3%	100.0%
	Yes - not at Sellafield	Count	9	1	10
		% within nuclear household	90.0%	10.0%	100.0%
	No	Count	190	26	216
		% within nuclear household	88.0%	12.0%	100.0%
Total		Count	345	32	377
		% within nuclear household	91.5%	8.5%	100.0%
Kendall's tau-b .001 Gamma .001 Spearman Correlation .003					

Table 6.2 – Crosstabulation of opinion towards the nuclear industry with household member working in the nuclear industry

Despite the benefits of high wages not being universally felt, public opinion towards the industry is almost universally positive in Copland and remains overwhelmingly so in the whole region. Those in a household where someone works in the nuclear industry are far more likely to hold pro-nuclear opinions, with less than 4% of those in a 'nuclear household' expressing anti-nuclear opinions. Even among those not directly dependent on the nuclear industry for some or all of their household income only 12% expressed anti-nuclear opinions. The geographical split of nuclear opinion shows that of those who are anti-nuclear are more likely to live in Allerdale. Of those who live in the two boroughs nearly all the respondents from Copeland are pro-nuclear (96.7%) and while this drops in Allerdale the vast majority of the respondents from that borough were pro-nuclear (84.1%).   However, there is a clear and significant difference between the two boroughs for the 32 anti-nuclear responses, with 78% of those expressing anti-nuclear opinions living in Allerdale.

Nuclear Opinion * Borough Crosstabulation

			Borough		Total
			Copeland	Allerdale	
Nuclear Opinions	Pro Nuclear	Count	207	132	339
		% within Nuclear Opinions	61.1%	38.9%	100.0%
	Anti Nuclear	Count	7	25	32
		% within Nuclear Opinions	21.9%	78.1%	100.0%
Total		Count	214	157	371
		% within Nuclear Opinions	57.7%	42.3%	100.0%
Kendall's tau-b .000 Gamma .000 Spearman Correlation .000					

Borough * Nuclear Opinions Crosstabulation

			Nuclear Opinions		Total
			Pro Nuclear	Anti Nuclear	
Borough	Copeland	Count	207	7	214
		% within Borough	96.7%	3.3%	100.0%
	Allerdale	Count	132	25	157
		% within Borough	84.1%	15.9%	100.0%
Total		Count	339	32	371
		% within Borough	91.4%	8.6%	100.0%
Kendall's tau-b .000 Gamma .000 Spearman Correlation .000					

Table 6.3 – Public opinion towards the nuclear industry by Borough

The reasons for supporting the nuclear industry (table 6.4, below) were predominantly local and national, with 63.5% of those who considered themselves a supporter of the nuclear industry doing so firstly because it supported local jobs and secondly for reasons of domestic energy security (41.8%). In contrast, among those who did not consider themselves a supporter of the nuclear industry international and global concerns were more important to them, with 'Accidents pose potentially global risks' and 'Already harms the environment across huge areas' being the most popular reasons for holding anti-nuclear opinions from the responses available.

For those who do consider themselves supporters of the nuclear industry, which of the following four statements most closely matches your opinion? And which second-most closely matches your opinion?

		First choice		Second choice	
		Frequency	Valid Percent	Frequency	Valid Percent
Valid	Supports jobs in West Cumbria	245	63.5	57	15.4
	Helps Britain to be less reliant on foreign sources of energy	74	19.2	155	41.8
	Is important in the fight against climate change	19	4.9	50	13.5
	Is the only way to meet energy needs of a rising global population	48	12.4	109	29.4
	Total	386	100.0	371	100.0
Missing	System	44		59	
Total		430		430	

For those who do not consider themselves supporters of the nuclear industry, which of the following four statements most closely matches your opinion? And which second-most closely matches your opinion?

		First choice		Second choice	
		Frequency	Valid Percent	Frequency	Valid Percent
Valid	Damages the local environment	27	36.0	11	15.3
	Puts off other employers locating here	12	16.0	12	16.7
	Accidents pose potentially global risks	30	40.0	22	30.6
	Already harms the environment across huge areas	6	8.0	27	37.5
	Total	75	100.0	72	100.0
Missing	System	355		358	
Total		430		430	

Table 6.4 – Reasons for supporting or not supporting the nuclear industry

There is no significant difference in either borough between responses for the reasons for and against supporting the nuclear industry (table 6.5, below). There is a slightly greater proportion of the sample in Copeland believing that the nuclear industry was off-putting of other industries coming to the area. The material benefits and dis-benefits for the area are more salient in Copeland, closer to the site and more dependent economically on it than for Allerdale. However, it is clear that opposition to the industry is based on concern for risk and the environment whereas support is strongly based on material concerns of jobs and wages. The issue this raises is that Copeland in particular has a

labour market dominated and polarised by the very generous terms and conditions available in the nuclear industry, particularly at Sellafield. This is not a recent phenomena, as a survey of perceptions of West Cumbria among business executives over twenty years ago in 1995 revealed that operating costs were the biggest barrier to inward investment, and this was based on the dual issues of rurality and an extant highly paid yet low skilled workforce (CBI 1995: 7). In this context of a support for nuclear based in large part on its supporting the local economy, it might be assumed that the local population believed that Sellafield and the wider industry were therefore providing well for the area. However, the survey revealed that there is a more complex understanding of the situation among respondents.

Nuclear Opinion * Special Rights Crosstabulation

| | | | West Cumbria has hosted nuclear sites since the 1950s – which of the following statements most closely matches your opinion. West Cumbria… | | | |
			…deserves more from government than other areas for its service	…does well from the nuclear industry	Both answered	Total
Nuclear Opinion	Pro Nuclear	Count	153	185	1	339
		% within Nuclear Opinion	45.1%	54.6%	0.3%	100.0%
	Anti Nuclear	Count	19	9	0	28
		% within Nuclear Opinion	67.9%	32.1%	0.0%	100.0%
Total		Count	172	194	1	367
		% within Nuclear Opinion	46.9%	52.9%	0.3%	100.0%
Kendall's tau-b .022		Gamma .022	Spearman Correlation .020			

Table 6.5 – Nuclear opinion cross-tabulated with belief in special rights

Overall, when asked whether they believed West Cumbria deserved more than it currently received for its service in hosting Sellafield 52.9% stated the area had done well from the nuclear industry. Among those responders who support the nuclear industry, the majority of responders also believed that West Cumbria 'does well from the nuclear industry' but only a small majority.

However, among those who do not support the nuclear industry the belief that 'West Cumbria deserves more from government than other areas for its service' was held by over two thirds of those responding. Given that jobs are the primary concern among those who support the industry, and the job market in West Cumbria is both dominated and polarised by the nuclear industry, the belief among pro-nuclear responders that the area deserves more is not necessarily unfounded. There is further complexity when the sample was broken down geographically as per map 7.1 and table 7.1 below. Copeland (B, excluding the area directly around the Sellafield site) was the only area to have a majority of responders state that 'West Cumbria deserves more from government than other areas for its service' (51.9%).

Below there is a map of West Cumbria, divided into four areas – A, B, C and D. Please indicate below which of these four areas you live in. * West Cumbria has hosted nuclear sites since the 1950s – which of the following statements most closely matches your opinion: Crosstabulation

			West Cumbria has hosted nuclear sites since the 1950s – which of the following statements most closely matches your opinion:			
			West Cumbria deserves more from government than other areas for its service	West Cumbria does well from the nuclear industry	Both answered	Total
Please indicate below which of these four areas you live in.	A	Count	12	16	0	28
		% within A	42.9%	57.1%	0.0%	100.0%
	B	Count	108	98	2	208
		% within B	51.9%	47.1%	1.0%	100.0%
	C	Count	56	73	1	130
		% within C	43.1%	56.2%	0.8%	100.0%
	D	Count	14	23	0	37
		% within D	37.8%	62.2%	0.0%	100.0%
	None	Count	3	5	0	8
		% within None	37.5%	62.5%	0.0%	100.0%
Total		Count	193	215	3	411
		% within areas	47.0%	52.3%	0.7%	100.0%

Table 6.6 – Perception of corporate responsibility of the Sellafield site by geographical area

Map 6.1 – West Cumbria, divided into four areas

Indeed, even when exploring this further broken down by borough and opinion towards the nuclear industry, those who support the industry in Copeland are still ever so slightly more likely to believe that the area deserves more for its service than that it has done well. Those with pro-nuclear opinions and living in Allerdale were strongly of the opinion that the area did well from the industry. The situation is reversed for those who do not support the industry, where for both boroughs respondents believing that the area deserves more for its service, but a greater proportion of the responses from Allerdale stating that. Therefore, among a small majority of those supporting the industry in Copeland there is a recognition that the area has not necessarily done well enough, yet an overwhelmingly pro-nuclear public opinion.

The benefits to the area from hosting the nuclear industry are traded against the risks, where the potential dangers of the industry are not ignored by the local population but accepted as part of a bargain which recognises that the industry is central to the local economy and lifestyle (Blowers 2003: 72). Indeed, there exists in west Cumbria a "countervailing sense of pride" at being so open to

nuclear risk (Wynne et al 1993: 58). In addition the area has a long-term

familiarity with the industry and more positive press coverage compared to

national press coverage. However, despite this, the people of West Cumbria do

not accept absolutely all nuclear developments. This is demonstrated by

controversy surrounding the proposal to site two new nuclear power stations

away from existing nuclear facilities which was met with substantial local

hostility, in contrast to the Moorside site adjacent to Sellafield which was

broadly well received (Haraldsen et al 2011).

6.2.1 - Corporate social responsibility and the nuclear risk premium

The staff workers at Sellafield recognised that they, and many like them, were in

a privileged position and that there was a lot of money in the area as a result of

the nuclear industry but were at a loss as to why then towns like Whitehaven

were struggling:

> *Because there's no economy is there, [murmurs of agreement] well there
> is, actually*
> *Its pound shops and charity shops.*
> *But it doesn't make sense, does it? So where's all the money going?[2]*

The participants then talked about how places like Whitehaven were the victim

of changes in the general economy, particularly internet shopping. However,

regardless of the cause, other towns in the area do much better, with the small

market town of Cockermouth being mentioned, despite being further away from

the Sellafield site. It was also mentioned in two groups that staff in higher paid

positions lived outside Whitehaven. The question which this raises is – what

responsibility does Sellafield and the nuclear industry has if any, to address

these problems? When asked whether they believed West Cumbria deserved

[2] 24/09/2013 Sellafield professional workers

more than it currently received for its service in hosting Sellafield, 46% agreed, with 49% stating the area had done well from the nuclear industry. This was reversed however when the sample was broken down geographically as per map 7.1 and table 7.1 earlier. Copeland (B, excluding the area directly around the Sellafield site) was the only area to have a majority of responders state that 'West Cumbria deserves more from government than other areas for its service' (51.9%). Such a significant proportion of the population locally believing the area deserved more for its service suggests that many do believe in specific local rights in relation to hosting nuclear sites. Local authority participants discussed this question in depth, agreeing that there was a duty on any large employer to support the community in which they operate. However, the detail of what exactly such a duty might look like was not by any means agreed, with one participant urging quite far reaching obligations, and recounting how in the past this has been seen to be akin to blackmail:

> *I've been told time and time again that don't say a certain things to nuclear industry to new gen to national grid, they'll see that as us black mailing them. I think that is the totally wrong attitude to have. Now it isn't black mailing them it is making them understand what is their duty is...[3]*

Local authority participants believed that Sellafield was not living up to its responsibilities to the community and that given the amount of money being spent in the area, the wider community should not be facing some persistent inequality, and thus the nuclear industry in the area needed to do more. The post-nationalisation of ownership (and profit) has become entwined in this debate:

> *I think there is a sense that they are not contributing. I think given their behaviour as well, and how the amount they have taken out of this area which goes overseas which is not being circulated back into our*

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[3] 02/12/2013 Copeland Borough Council

economy, I think there is a sense that they are not actually meeting their corporate responsibility.[4]

A significant problem, as identified by the local authority participants, was that there is no standard formula to work out what a local area can expect from a large company thus each is a case-by-case basis. In this case there were two issues; firstly what is the basic level of corporate responsibility expected of any large employer; and, secondly what additional benefit should the local area receive which is specific to the nuclear risks associated with Sellafield's work:

> *I there is something for me about corporate social responsibility in any large employer and I think where we go to here is that there is a perception that the nuclear industry owes us a living because it is in our back garden, but I'm not sure that Sellafield is living up to any corporate social responsibility because it gets thrown into this debate about the additional nuclear risk so for me it's quite difficult to separate out, if you like, what it should be doing as any other large cooperative or whatever should be doing through CSR, and what is the extra bit that would be expected from the risk for the local area.*[5]

Therefore, while the Sellafield site and the presence of the nuclear industry in West Cumbria has had, and continues to have, a substantial effect on the labour market in West Cumbria as explored earlier it has also had significant environmental impacts. This nuclear risk issue has had a consequent effect on perceptions of the area for people looking to the area from the outside.

> *There's a fantastic park but there's also perception around a nuclear site, because there is still a perception around nuclear, so again even there we've got a dichotomy because come to the beautiful lake district or would you go to that place near where the Sellafield site is? And that doesn't give us a very good badge.*[6]

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[4] 02/12/2013 Copeland Borough Council
[5] 02/12/2013 Copeland Borough Council
[6] 02/12/2013 Copeland Borough Council

Similarly, both A-Level students at a local school and students at the local college in separate focus groups when asked to sum up their area in a few words mentioned the same two themes of rurality and nuclear:

Sellafield.
Boredom.
Nothing here.[7]

Fields .. sheep.
Next to the Lake District. Everyone knows where that is.
Near Sellafield.[8]

This additional challenge for the area, on top of the economic challenge posed by the isolation of the area, stemmed from not simply the presence of the industry, but its actual record. The Windscale fire of 1957 was, until the explosion at the Chernobyl plant in 1986, the world's worst nuclear accident and remains the worst nuclear accident in the UK (Leatherdale 2014). The perception of an area blighted by its association with eh nuclear industry, and this having associated economic challenges, was traced back to that fire:

1957, when the fire went up, Rowntrees had a chocolate factory in Egremont. It was going to be biggest chocolate factory in Europe. They used to manufacture the crumb for chocolate that was taken to York to be made into a Kit-Kat and every other thing you can talk about. As a result of that fire from Sellafield and the contaminated milk, Rowntrees closed to the factory down because they could not risk the chance of worldwide sales of something like a billion Kit-Kat being associated with contaminated milk because old milk was used from there. We were notified that Rowntrees was to be closed and it was closed literally overnight. Now, that blight, how far did that go into the community?

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[7] 20/02/2014 Lakes College West Cumbria students
[8] 13/12/2013 Whitehaven School Sixth Form students

That's just one example. How far did it go into the community of West Cumbria and how far has it gone from that day? [9]

The fire, and response to it, is revealing of the nature of the earliest days of the UK atomic programme. Driven by central government, the desire for atomic weapons placed the site under pressure to produce plutonium. When the accident occurred, the subsequent Board of Inquiry blamed the operators for their recklessness, but this was disputed and demands made by government were thought to be contributory as they had led to alterations to the design of the fuel cartridges which made an overheating and fire much more likely (Arnold 1992). The blaming of the operators, and subsequent revelation in 1988 when the transcripts of the inquiry were declassified under the thirty year rule, illustrates the combination of both central state and expert authority that dominated the nuclear industry from its inception:

After the Winscale fire of course, it was revealed that actually central government lied. The blame was put on to certain individuals for that event whereas, when you look at the underlying cause, the reality was the personnel who were operating Windscale were put under unbearable operating pressures from number 10, and I think when that disclosure was made very publicly that might of had a role again in galvanizing essence of support for the site and for people on the site. [10]

The lack of an understanding of the complex activities of the site remains an issue for the industry to persuade the lay population of the safety of the industry.

There's such a level of, well in some parts, distrust [murmur of agreement from other participant] of what we do, people are a little bit frightened of what we do at times and don't quite understand sometimes

[9] 02/12/2013 Copeland Borough Council
[10] 02/12/2013 Copeland Borough Council

what we do and we've sometimes been victims of, er, of that poor perception.[11]

In this context of potential blight coupled with an issue that is inherently technical, scientific and complex, it is difficult to come to an understanding of risk and the compensation to offset that for nuclear facilities (Kunreuther and Easterling 1996; Frey et al 1996). Indeed, what might be viewed as a burden or a blight for some, may be viewed as an asset for others:

> *We are having to force them now when they give contract out to companies to build in you must take a certain amount of apprentices on, you've got to.*
> *Child poverty as well just like you mentioned. What was that percentage?*
> *[Facilitator] 45 percent in one ward in Copeland, the only place higher in Cumbria is central ward in Barrow which is 50 percent.*
> *And that shouldn't be the way it is.*
> *It shouldn't.*
> *Do they get involved with things like that they don't and they are not interested they are just not interested.*
> *As the crow flies 11 miles away from the highest stock pile of plutonium in the world and the money that site generates and you have got a stat like that 11 miles away it's just...*
> *...it's crazy[12]*

The implication here is that the presence of the nuclear industry ought to be a boon for the area. However, this is not the case as has been explored in this chapter. Despite all this it was noted that more than in other places, West Cumbrians looked to their large institutions to solve problems.

> *I do sense there is, this community looks towards it local authority and elected members to fix the problem.*
> *And the nuclear industry.[13]*

[11] 24/09/2013 Sellafield professional workers
[12] 05/02/2014 Sellafield industrial trades' unions
[13] 02/12/2013 Copeland Borough Council

6.2.2 – Identity and obligation

There is a strong community identity in West Cumbria. When asked which geographic area they felt closest to, 60% responded with the town or locality they lived in, and the second highest response was 'West Cumbria' at 20%. West Cumbria came highest when asked which geographical area respondents felt second closest to at 40%, with 88% of those who felt closest to their locality choosing West Cumbria as their second closest area:

To which of these geographical areas do you…

		…feel you closest to?	…feel second-most closest to?
Valid	Town or locality where you live	61.8	8.9
	Town or locality where you're from	7.7	11.7
	West Cumbria	19.3	39.7
	UK/Great Britain	9.6	34.3
	Europe	.7	1.6
	World	.9	3.7
	Total	100.0	100.0
Total		100.0	100.0

Table 6.7 – Geographical areas responders felt closest and second closest to

It is clear that for those living in the area, despite it not being formally constituted, there is a clear identification with West Cumbria among the local population. The area has as explored in chapter two an isolated geography, shared history and economy, overwhelmingly homogenous cultural background with 98% white British (2011 census) and consequently lower levels of immigration than for less isolated areas. The population, thought one focus group participant from the local authority, as a result of these factors, are unique:

Predominantly we do not have the population in this area that represents a large itinerant work force so if you went into the south east for instance, people will perhaps live there for a few years and then move on into other areas as a person to the careers. I don't believe you see that same phenomena in this area. I think that in itself create a sense of belonging a sense of identity with the area and again I think about actually helps foster community values.[14]

The idea of community values, when asked of participants from both local schools and further questioning in the local authority group, focussed on what might be considered 'traditional' community values of 'civil sociality', which is found elsewhere to be the most common understanding of what it means to be a citizen (Stack 2012: 871):

Being a member of society, what it's like to live as a member of society. Yeah, the culture around us, from all part of the world.
Like how you act towards other people, so like being friendly or kind of helping out other people.[15]

There's a sense that you look after your neighbour whereas, I'm from outside this area. I sense the sense of duty to your neighbour is stronger here then I have experienced elsewhere[16]

While this is a common understanding of the values of a community, it was felt that the presence of the nuclear industry helped foster these locally:

What the nuclear industry does particularly at Sellafield or BNFL, it has fostered a sense of citizenship it instils in its workforce, and that workforce dominate this area, a sense of community values.[17]

These 'community values' which are fostered by the Sellafield site and, m through its dominance of the labour market, felt more widely are not just the pro-nuclear public opinion explored earlier. Participants felt that, through the long term, secure jobs, and the unique position that Sellafield occupies in terms

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[14] 02/12/2013 Copeland Borough Council
[15] 13/12/2013 Sixth form pupils
[16] 02/12/2013 Copeland Borough Council
[17] 02/12/2013 Copeland Borough Council

of stable employment, regardless of external factors (it is not possible to not decommission the site) allowed those locally to focus on the wider community and their responsibilities towards it:

> *Yeah, but I think another characteristic though of the Sellafield workforce, you often hear it said within the community that the Sellafield workforce can be a lazy workforce and if they ever had jobs in the real world they wouldn't be able to survive. I'll be honest with you I have worked in the private sector and I've worked in what I would consider to be the public sector still and there is a sort of a lazes-faire semi academic culture I think that does exist, but I do think that benefits the area in the sense that people are given the freedom and the time and the inclination focus on community and civic activity whereas I think when you work truly in the private sector and you are working all hours of the day with the prospect that you might move from one area to the other I think you are less inclined to even turn your thoughts to issues of citizenship and community.[18]*

The fostering of these values, and those of a pro-nuclear public opinion, happen as a result of the stability that the Sellafield site provides over a number of decades and at one time more than now, the ubiquity of the site in the lives of its workers:

> *I watched an old film the other night, terrific film, a classic 'a kind of loving'... I think it was Leeds in the very early 60s late fifties, Leeds or Nottingham, the firms run your life for you and Sellafield was the same with the sports and social clubs, everybody drank in them and this was the works dance, and there was a works formation team came in and danced, and ... there was a big typing pool with a thousand typists in there and a drawing office and things, Sellafield was like that initially, you had all these social clubs what about all over the place, so they run your social life as well as your working life and as you say, everybody you*

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[18] 02/12/2013 Copeland Borough Council

knew, you socialize with, you worked with as well, and you live next door to them, you work with them and you socialize with them.[19]

The strong attachment to their geographical area, its isolation, the dominance of Sellafield and the reasonably homogenous and static population; these things and others beside all contribute to the feeling of a close and almost closed community. However, Sellafield has had large influxes of workers in the past. In the 1950s when the site was established, and again in the 1980s when large scale civil engineering works were underway to construct new industrial plant on the site. In both these instances there was a large influx of workers, in the first case quite permanent, and in the second temporary contractors from elsewhere in the UK. Despite arriving into an isolated and close community, in the past influxes of people have been greeted warmly and integrated into the community:

A lot of them they started off in Egremont, but then they, because of the skills and whatever, they then moved to Beckermet, Seascale, St Bees, they moved out, so that they were again communities.[20]

The influx was of highly skilled engineers and scientists, who ended up moving into traditional villages which had to expand significantly, and from there later dispersing from those pre-fabricated housing estates into the wider community. The influx in the 1980s was different. While undoubtedly causing a myriad of small problems at the time, it was an economic boom for the area which was more temporary, akin to a prospecting gold rush. These two major inward movements of people were, compared to recent migration, large in the scale of the number of people involved. The migrants into Sellafield and West Cumbria

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[19] 02/12/2013 Copeland Borough Council
[20] 02/12/2013 Copeland Borough Council

following the changes in the ownership in 2008 were small in number, and almost exclusively senior managerial positions. A key recurring theme throughout many of the focus groups was the cultural differences which existed between workforce and the new managers' attitude towards the wider community. Participants thought that the new managers were bringing the values of their American parent company, rather than adapting to West Cumbria and Sellafield:

> *[the former British Managing Director of Sellafield] made sure that he looked after the local community, and he looked after the workforce, I believe this lot couldn't give a hoot about the local community and the workforce it's just about money and sending money back across the Atlantic ocean to me.[21]*

The former (British) Managing Director, when the site was nationalised, was held as being more in tune with the needs of the local community. This is in stark contrast to the perception of the current management:

> *I think they just keep to their own little clique. Oh they do.*
> *I don't think that they go out into the wider community; they have their own little parties in their own little enclaves.[22]*

Mundane, everyday actions were important, such as where these people shopped, and when they did their use of expenses, which was seen to imply that the new directors do not share in, or even understand, the issues faced by many of those in the community:

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[21] 05/02/2014 Sellafield industrial trades' unions

[22] 05/02/2014 Sellafield industrial trades' unions

I would say you use the same supermarkets I use, have you ever met them, have you ever met them in any of the Copeland area supermarkets? Have you ever met any of them shopping anywhere in Whitehaven, have you ever better than walking down the street because I've never met one.

I've met a couple but I can tell you something now I've always check how they are paying and they are always paying by their one card, which is the company card, always paid by the company card. I've never seen any of them using cash.[23]

The participants talked about company cars which sat unused, in favour of taxis charged to Sellafield (and thus the taxpayer), a collection of issues also heavily criticised by the House of Commons Public Accounts Committee in 2013 (PAC 2012). Throughout the sessions this emerged as a theme, that the new managers could not understand the situation in West Cumbria, particularly areas of deprivation. In the focus group with industrial trades' unionists, '*don't understand'* and '*not interested'* in relation to the attitude of new owners and managers came up 17 times, and then on top of that there were references in that group and the staff unions group to cultural differences being an issue. There are two issues which this lack of understanding appears to arise from. Firstly, it is clear that the imposition of overseas ownership and management has not been well received. Secondly, the perception of a gilded elite, detached from the reality of the area that these new managers now have a direct impact upon, has become entrenched:

And if you look, they can't understand poverty because I believe, and I haven't any fact and these two can maybe shoot me down if I am wrong but I believe that you have a director whose wife is a director for

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[23] 05/02/2014 Sellafield industrial trades' unions

somewhere else you know and their child goes to St Bees School, so they don't understand poverty, they don't understand the kids who are going to Valley Junior School, Valley Infant School, Monkray and this that and the other. They just can't grasp and they're not interested, by the way. They're not interested.

That's it. It's not that they can't grasp it, they're just not interested, eh.[24]

It is not just that these are geographical outsiders. There is a perception that the new managerial staff are, like other highly paid workers locally, not embedded and either are not interested, unable to understand, or just do not care about wider community and its fate. When questioned about the cultural differences between the existing site and the workers coming from overseas, trades union participants admitted that they were initially willing to accept a period of adjustment, but it never arrived:

Do you know something, I didn't buy into that one bit, erm, that used to be the consistent argument that in particular the Americans for NMP used to give us 'we do apologise, guys, but you know we don't work with trade unions in America or if we do they don't work like you do, and you know we're not familiar to this type of working, you know'. That can only go on so long, you know, a week, a month, at most a year, I know if I was going to Savannah River to hold a senior manager's position at Savanah River, I'd know everything, not just about the site, the plants, but about the area it was at, the people I was going to meet. I'd bottom the lot, and I can't believe people are coming over here from America and the highest paid of them were on £1.2 million per year and they wouldn't also dig into, what do I need to know about everything.[25]

When pressed further on the point of highly mobile workers, and whether they were of the type to prize their freedom of movement and not embed locally or

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[24] 05/02/2014 Sellafield industrial trades' unions
[25] 05/02/2014 Sellafield industrial trades' unions

whether they were those that immersed themselves in the local areas they worked – the libertarian or civic republican global citizens (Schattle 2005: 125) – the new American workers in particular, both in management and temporary technical support positions were felt to not want to embed locally, or even learn about the local culture:

> *I have heard [the CEO of the NDA at the time] say to me… he has worked all over the world with gas and oil, and one of the first things that he would do was get to know the customs and everything else of the local people and by the way wouldn't be rubbing their noses it telling people how much they made and this that and the other like these people do because he could not believe what he had heard some of these yanks doing to local people actually rubbing their noses about what they are making what they buy and this that and the other, he said he would never do that if he went to somewhere like in Vietnam awesome were like that the first thing he would be doing did he say would be for three or four weeks training on customs, training on the customs of Vietnam on the area he is going to what it was and respect that. These lot they just come in like you say, bang come in make the money and I think the biggest thing they want to get is 'I have worked at Sellafield' and by the way if they can get B30 on or B38[26] on the CV they are made for life, and that's the big thing isn't it?[27]*

This points not a simple reaction against outsiders, but a reaction against a group of people who are not seen to share the values of the wider community they work in, and thus are not motivated to do anything to help it. Further demonstration of this point can be drawn from an older event. In 1990, a local girl, Gemma D'Arcy, sadly passed away aged nearly seven years old after suffering with leukemia. She and her family lived near to Sellafield, and blamed the nuclear industry. A local authority participant recounts the reaction of some

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[26] Highly hazardous facilities on the Sellafield site.
[27] 05/02/2014 Sellafield industrial trades' unions

members of the community to the fight her parents made against BNFL and Sellafield at the time, particularly following a high-profile ITV television documentary 'Fighting for Gemma' aired in 1993:

> *I mean I can really remember there was a young girl Gemma D'Arcy, tragically and sadly died with leukaemia. Her father make his issue blaming Sellafield, no I'm not subscribing to that at all because I'm not medically qualified, but he had a big campaign. You could see that it was orchestrated against Sellafield. Well, a lot of sinister mail started to appear that their family were abused by... 'why don't you shut up you know the kids gone' and yeah these were from people ostensibly who work at Sellafield, that you're rocking the boat.[28]*

Community has its dark side related to being a member and the obligations of solidarity which arise out of that; there are those who are considered part of a community, and this status is defined in contrast to those 'deviants' who are not (Wylie et al 2016: 155). In the case above, the reaction against the parents of Gemma D'Arcy was motivated clearly by their attacks on the dominant employer locally. The perception was that the D'Arcy family was against the wider community which relied on Sellafield. Similar issues have been seen at other nuclear sites, such as near Thurso, where individuals and groups were maligned for being against the community, rather than the reality of being against specific aspects of the operation of their nuclear site (Wylie et al 2016: 158). The new foreign management at Sellafield is cast in a similar role, as outsiders and deviants, and not simply because of where they happened to be born. A focus group with staff in managerial positions had people from across the all of the UK. When asked how they would describe where they are from,

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[28] 02/12/2013 Copeland Borough Council

one participant was proud of his Scottish heritage, yet also of being in West Cumbria:

> *I don't know, but I would also say that, er, I'm Scottish but I live in West Cumbria, you know I'm clearly not Cumbrian, but you know 10 or 11 years being here you sort of have an affinity of the area and you're kind of proud of it.... So you know there's a certain pride about being not from this area but in this area. I don't live here because I have to, it's by choice.*[29]

It would seem clear then that, while some people do express a preference for local people in jobs at Sellafield, the backlash against people who move into the area to work is not simply about where they happened to be born, demonstrated by the lack of such a backlash against people from elsewhere in the UK who come to work at Sellafield and make a home in West Cumbria. This was shown by one group highlighting specifically the transient and temporary nature of those coming from overseas, and the importance of enhancing their personal career as the reason for them being at Sellafield and in West Cumbria.

6.3 – Privatisation and change

The workers, focusing on the negative impacts on their place of work, are not aware how important global connections are to the business of the site and its survival, according to one participant:

> *Do you think that from what you were saying most people didn't quite appreciate how globally connected the [Sellafield site is], how the decisions…*
> *Exactly that.*
> *Until it was laid out for them?*
> *Exactly that.*[30]

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[29] 24/09/2013 Sellafield professional workers
[30] 05/02/2014 Sellafield industrial trades' unions

The vision for the Sellafield site, as part of BNFL, prior to privatisation was to be a world leader in decommissioning services. However, the path taken saw the site and the workforce, rather than going out to sell their skills to the world, instead be part of a structure specifically designed to being expertise to Britain. The way this worked in practice at the site was through overseas workers being brought to facilitate transfer of best practice, but this was a one way exchange. Only personnel from the parent companies came to Sellafield, rather than workers being sent overseas from the site.

As explored in the previous chapter, the rationale for the contractorised model of operation at Sellafield and other nuclear sites was to bring "managerial and technical expertise and a private sector mentality" (KPMG 2013: 21) and payed fees based on meeting targets for programme delivery and a share of efficiency savings. However, the structure of the contract between the NDA and the parent body, particularly the incentivisation of efficiency savings, was problematic. The benefits which have been achieved through cost reduction have had "undesirable consequences" in particular leading to a "lack of focus on schedule performance, particularly for major projects" which will "ultimately cost more than the efficiency savings" (KPMG 2013: 110). The contract incentivisation structure that has led the parent body to seek efficiencies as a route to increased profit has had more wide-ranging impacts than just a loss of focus on other contractual obligations given the centrality of Sellafield to the local labour market.

When asked whether the transition to a multi-national consortium for the management of the site had meant that the site was more or less globally connected than it once was, the response revealed that while the management

was indeed drawn from companies operating across the globe, the workforce were no longer employed by the people that managed them. Seconding staff from the parent body organisation to manage sites, while the wider workforce remained employees of the enduring entity, the site licence company, meant that the workforce were not an asset of the people that managed them:

> *It actually, to me, it felt more global years ago, but when we were actually, when reprocessing was at its peak and you were out there providing a service for all these countries that I've just named, but I've no doubt if you had someone from URS or arrive in here now and you were to plot down on this table all the places where they've got work, got offices, interests...*
>
> *…but they had that before they come.*
>
> *They did but it doesn't feel, does it not, you know what I mean, if they were here now they'd probably say we're as global as we've ever been?*
>
> *But we're not as a workforce, because we don't work for them….*
>
> *…yeah, we don't work for them…*
>
> *…but it certainly doesn't feel that way, it doesn't to me anyway.*
>
> *We made our own fuel, we had everything.*
>
> *All they're there to do is implement that contract, we don't work for them, we're not one of their assets, the workforce.*[31]

The workforce are therefore an asset of the site licence company, but not the management of the site who are only temporary. The only condition that the management have in relation to the workforce is then to maintain "adequate financial and human resources to ensure the safe operation of the licensed site" (ONR 2016: 22). This was felt to be in stark contrast to the BNFL management:

> *If you look globally at what work's out there, and I believe when we worked for BNFL, they would be going looking for that work globally. At the moment, we don't go look for, they do as part of the consortium, as individuals like URS will go and look for work globally, but it's not for us...*

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[31] 05/02/2014 Sellafield industrial trades' unions

Aye, not for Sellafield, it's for themselves.

...we're getting nothing globally, and when you look there's work out there, in nuclear submarines, there's all sorts of work, but we're getting none of it whereas I believe in the olden days BNFL would have fought for some of that.[32]

In line with earlier comments about the management being only interested in making money, it is clear that the change in model for Sellafield significantly altered not only the status of the workers as an asset, but also heralded a change in culture from a perception of a paternalistic management to one not incentivised to either develop o even in the long term work well with the workforce. This is, however, more than just the attitude of a small group of managerial staff. The context in which the site operated changed. The contractorisation of the workforce heralded the change that many public services had gone through over the previous twenty years, from public administration to new public management – "the managerial and technical expertise and a private sector mentality" (KPMG 2013: 21) that the new model was supposed to provide, despite the claim that such techniques were "an all-purpose key to better provision of public services" being by that point thoroughly discredited (Hood 1991: 3). The change in the context of the site was summed up by two local authority participants, one an ex-Sellafield worker and one a current Sellafield worker, describing how the site operated in its 1970s through to 1990s peak:

When I started Sellafield it worked on a principle of cost plus and what that means is that you give a cost of say £2 million for a tonne of uranium and will process it, and then you add on after that, that is your profit before you start, and everything it cost you to make that to reprocess that is added on so that the person doing it was paying the bill.   I remember

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[32] 05/02/2014 Sellafield industrial trades' unions

my old boss saying […] it would be, instead of giving the foreman a bike to ride around on, it would be better for the company if we all had a car to ride around site on because the more it cost the more they got.   This is where the perception of being a lazy workforce comes from it is because you didn't have to work hard to make, you weren't tied to a...

We didn't have a shareholder, we did not have a shareholder demanding profit.[33]

In the BNFL days the company not only had a guaranteed client in the state owned reactors cross the UK, but it brought in significant overseas reprocessing contracts.

The best propaganda tool that we had was the old BNFL news which was irrespective of what was going on, it always boasted these figures you know what I mean, what the company made and every single time you opened a page they were signing a contract with somebody, weren't they? You know, whether it be the Italians, the Swiss and you know these at the time were, I suppose you can buy a footballer for the amounts now, but at the time these were colossal deals that were being struck, probably...
… and they were coming in regular…
… all the time, yeah.
And it was work coming in, it's the opposite way now, it's going out all the time, we're giving work away rather than fetching work in globally, we're giving it away, and it probably is global companies that are coming in, you know they are global companies coming in all the decommissioning and this that and the other. But what they fetch for the local community I do not know, a couple of jobs here and there because they do nothing else.
If we look at the pensions issue, how many years did we have a pensions freeze for?
Was it 7? I think it was.

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[33] 02/12/2013 Copeland Borough Council

You know where the government didn't need to put anything in because there was that much in the pot, where they just had a complete freeze … for seven years.[34]

In this context, the circumstances were right for workers to achieve significant advances in their terms and conditions. With an order book bringing in large amounts of money on the basis of 'cost-plus' and the imperative to reprocess fuel which cannot be stored[35]. With those twin circumstances in mind, it is easy to see how industrial action could be so effective:

If we go back a few years, Sellafield wasn't the best paid job by a long, long way. The miners were probably getting more, Marchon you were getting more, probably Smiths you're getting more. So with all those gone you would have thought Sellafield would have a monopoly and the wages would have gone down but it worked in reverse effect. The wages went up after the strike.

I was going to say 1976 Bill Maxwell [local trades union leader] was boasting that the Sellafield worker was going to be on 100 pounds per week, headlines in the paper wasn't it?

We went back off strike for a penny an hour.

And that was about '76 wasn't it?

'77 I think yeah, we went off strike after about nine weeks for a penny an hour. The next wage rise was 15 percent and after that was 25 percent. That's where we got the big wages from, so they wouldn't go out again basically that was the idea. [36]

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[34] 05/02/2014 Sellafield industrial trades' unions
[35] Fuel from the first generation nuclear reactors – Magnox fuel - degrades when stored in water for even relatively short periods, which poses a challenge as the spent fuel generates heat, and there is no proven method for storing the duel dry outside of a reactor core (NDA 2014 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/457813/Magnox_Fuel_Strategy_-_Contingency_Options.pdf)
[36] 02/12/2013 Copeland Borough Council

The very generous terms and conditions at Sellafield achieved through the 1970s extended beyond wages though. While pay was generous, the wider culture of the site was very paternalistic:

> *You know something else, we have I believe we have probably one of the healthiest communities in relation to the medicals that Sellafield have always afforded people, when I was there at the height of the contracting every contractor was given an annual medical and you would be amazed at the amount of people who were sent on to their own doctors that found this, that or the other that would have never been found out, just through, you know, they would probably have died with some condition so then they stopped that but we had a great backup that way, didn't we?*

> *We got a medical every 3 months and because we worked with lead, and young Dixie, he hadn't leukaemia one three months, he had it the next, it was the quickest anyone had ever found leukaemia and he's still alive today, that was 20 years ago, and that was through Sellafield's medical system.[37]*

However, the creation of a market for decommissioning services as the site transitioned from a commercial fuel services provider to a legacy decommissioning issue led to a wide array of changes as explored in earlier chapters. The site becoming a cost to government rather than an income generator, coupled with the imperative to more quickly deal with the multitude of ageing facilities posing increasing risk, brought about the new model. The marketised model for management at Sellafield, in particular the imperative to save money, had a range of effects for the terms and conditions of workers. No longer protected by the income from reprocessing, but an expensive drain on public money, changes were made. One of the early changes made by new management at Sellafield which demonstrates well not only the desire to save money, but also an end to the paternalistic management and a change which

[37] 02/12/2013 Copeland Borough Council

disproportionately would have affected industrial workers, was an attempt to

remove company supplied towels from the changing rooms.

> *I mean the clearest one with regards what you want to know was about the difference when they took over. They must have landed in for 12 months, just you know starting to feel about the business, getting adapted to the site, and one of the first things they wanted to implement was the removal of towels for active area workers. Now if you think about our members, you know what I mean we represent the industrial people on site, erm, our membership is overwhelmingly active area workers that is a direct attack on them people.*

> *I mean the biggest issue about that with the towels was, what they didn't grasp was that our job mainly was to keep any radioactivity or contamination on that site and not let it go anywhere else. People fetching their own towels in and taking the towels home, we tried to explain to them, could lead to west Cumbria being contaminated by whatever and they just didn't get it like. We had to grievance it to stop them doing it.*

This change, although unsuccessful, was the first proposed of many which

disproportionately impacted industrial workers. Following from that change,

minimum qualification requirements of three GCSEs in English, maths and a

science were brought into force, technically for all staff, but in reality only

applied for industrial workers:

> *The biggest kick into the local community was they then came to us and said ' by the way, we've said you have got to have three GCSE's to start Sellafield, English, maths and a science...[38]*

There are various reasons for imposing minimum qualification levels on

workers, depending on what the worker is there to do and what type of

organisation they work for. In this case, given that general qualifications in

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[38] 05/02/2014 Sellafield industrial trades' unions

English, maths and science are not directly related to the ability of the worker to carry out manufacturing and manual type jobs, it is clear that Sellafield take a "positional good" perspective on education which uses schooling and qualifications mainly as an indicator of trainability (van de Werfhorst 2011: 534). This can be seen as inevitable, given the contractual model on which the new management run the Sellafield site, and in particular the way in which savings on the budget for the site are shared between the government and the new management. Saving money is incentivised by leading to higher profits on the contract, thus it makes sense to lower the costs of training. The problem for both local authority members and trade union members was that given there is a polarised labour market, a blanket refusal to consider applicants on an individual basis was exclusory of so many:

> *The nuclear people, and they are not the only people, they tend to go for the high achievers and you can understand that, they have a business to run […] the other category of people just fall off the radar all together.*[39]

Even for those who have taken the time to undertake an apprenticeship and improve themselves, the blanket ban on hiring without three GCSE's in English, maths and a science excludes them from the biggest employer in the area:

> *They have raised the bar really high you need a certain standard to work in the nuclear industry but I think they have raised is really high we have got local people who can't get work at Sellafield...*
>
> *…especially in craft as well, there are a lot of craft who have an apprenticeship have done an apprenticeship and can't get work at Sellafield.*[40]

The justification by management of these minimum qualification levels was more difficult when subsequently attempts were made to bring staff from the

[39] 02/12/2013 Copeland Borough Council
[40] 05/02/2014 Sellafield industrial trades' unions

Chapelcross site in South West Scotland to work on similar nuclear reactors at Calder Hall on the Sellafield site:

> *another high profile dispute we had with the company over the last so many years was the movement of workers from chapel cross, where the chapel cross reactors have come to an end they had been defueled, and the company just approached us, and just, it was blasé really wasn't it when they initially approached us as if, you know, just letting you know..*
> *…We're going to bring...*
> *…X amount of workers to defuel Calder. Hang on a minute, we've got the highest youth unemployment rates or some of the highest youth unemployment rate in the country in west Cumbria why don't we train people up now and give them the work. 'Er, hang on a minute, we'll do what we want to do, we want to move people down from Chapelcross' what's they said was we haven't got time we need to get it done within the next 18 months and so we need to bring experienced people in, and that was what, two to three years ago? Still haven't started on it.[41]*

The perception became that the overseas management worked purely in the short term interest of greater efficiency savings and therefore more profit for their parent companies, rather than what was in the interest of the community in which they worked. As well as the more altruistic concerns for the local area, trades unions have reasons other than local job access to be concerned about the imposition of minimum qualification levels on industrial workers. There is a perceived unfairness when no such minimum requirement exists for white collar staff. One participant explains that under nationalised ownership, the terms and conditions for both blue and white collar staff were being brought together, a process which has gone into reverse:

> *In 1999 the company pulled together a single status… contract where they merged the blue book which was the industrial worker handbook*

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[41] 05/02/2014 Sellafield industrial trades' unions

and the white handbook, it was a white handbook wasn't it, which was the staff, and the direction the company really should have adopted from 1999 is sort of intertwining these two together as the years have gone by where we were eventually in a position where every worker is treated the same.[42]

The implication of the unequal treatment of white and blue collar workers is a perception of the white collar workers looking after themselves and their own types of people in an act of social closure, by maintaining their ability to recruit who they like through interview, while rejecting thousands of locals with poor formal qualifications which do not necessarily have a direct impact on their ability to do the jobs they would be doing.

Once inside and working at the site the differences between blue and white collar positions continues to demonstrate that far from being one workforce, it is in fact two. The 'semi-academic culture' explored earlier, which it was suggested allowed the workers time to focus on such things as community and voluntary work was clearly very successful, popular with some workers and potentially essential to :

> *Are you encouraged then as Sellafield workers to do a certain amount of volunteering or whatever?*
> *Absolutely yeah, they have a policy and actively promote it. What kind of take up does it have?*
> *I think it is quite significant, I think when you look at the number of people engaged in running youth clubs...*
> *…STEM ambassadors…*
> *...yeah, governors, mountain rescue.*
> *I'm a school governor and six of the other governors are Sellafield employees, yeah.*[43]

Coupled with the significant cash that Sellafield gives to various organisations within the community, and the generous wages of workers at the site, it is

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[42] 05/02/2014 Sellafield industrial trades' unions
[43] 02/12/2013 Copeland Borough Council

undoubtedly the case that the Sellafield site supports the community not only economically, but socially and culturally. However, there were two caveats to this generosity raised by industrial workers representatives. Firstly that allowing time off for community work favours those in office based and staff roles, rather than shift workers who may be working in teams where a minimum level of staffing has to be guaranteed, and secondly that the generosity is both changing and specifically focussed on causes that the management themselves are interested in. Essentially, this amounts to allowing company time and money to support the personal interests, such as specific sports facilities and so on, of the higher level staff. Indeed, the generosity of management in relation to allowing staff to participate in local civil society may obscure wider issues of where such generosity and largesse is directed. As seen earlier, the imposition of minimum qualification levels effectively closes opportunity to the already excluded, but in the case of the site's relations with the wider area, its largesse is potentially being used to advance the personal interests of the staff workers who are budget holders. The issue of a recently closed local authority owned civic hall led to a discussion on where Sellafield workers have their meetings. External meeting rooms were not centrally booked, but charged to each individual budget, of which there are many. It was felt by participants in the trades' union group that rather than using facilities which may benefit from the income, staff workers were spending the money on venues which they used personally outside work:

> I'll tell you what they're doing, Egremont Rugby Union club, because a lot of managers [inaudible] there, they've had the big extension put on. That would survive without us.[44]

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[44] 05/02/2014 Sellafield industrial trades' unions

Other examples, such as using the local golf club and the masonic centre, fed into a perception of bias in spending in the local area. This perception of bias, where managerial staff support their own causes and social groups, points towards another act of closure by a dominant group who control access to resources. The same can possibly be said of staff time, given that being allowed to leave is at the discretion of managerial staff, and is less likely to be granted to industrial workers who may be subject to minimal operational staffing levels, unlike their white collar counterparts.

One particular cost-saving proposed which demonstrates the impact of changes at Sellafield on the wider issues of disadvantage and inequality in the wider community was the proposed removal of the assisted travel scheme, a subsidised bus service, which has for many years taken workers to the site.

> *The other one they couldn't grasp was the removal of the assisted travel scheme, and what we raised then [with the Head of Human Resources] we sort of said to her you know we have young kids starting apprenticeships this place is in the middle of nowhere how do you expect them to get to work? There could be somebody on Greenbank, Woodhouse, Mirehouse, the only person working in that family could be that apprentice because of the areas that they come from and she just couldn't grasp that.[45]*

Indeed, the decision was seen as hypocritical given that senior management had minibuses, company cars and taxis on expenses to take them wherever they needed or wanted to go. One contribution summed it up:

> *But to remove assisted travel, there's no two ways about it, it's your lowest paid within the business that's going to be most hit by that, they are the ones who need this facility.[46]*

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[45] 05/02/2014 Sellafield industrial trades' unions
[46] 05/02/2014 Sellafield industrial trades' unions

Indeed, when questioned about their job aspirations, local college students, who were not planning on university study and were staying locally, were downbeat about their ability access jobs at Sellafield:

It's very hard to get to…
We've had opportunities to volunteer, to go there and do work, but I've always said no, because it's getting there and getting back, it's not worth it for me[47]

The reality of the assisted travel scheme was that, as one participant put it, "to use it you must have no other option" given that it would add hours onto the working day owing to the geography of the area and location of the site away from the major centres of population. The attempted reduction of the assisted travel scheme, to save money as with the removal of towels, was ascribed mostly to an indifference to or unawareness of the problems of poverty in some parts of West Cumbria, where in some areas child poverty is over 40%, directly adjacent to some of the wealthiest areas in the county. The impact of the reduction in assisted travel would have been to further restrict access to work at Sellafield to the very small numbers of people that live nearby or near a railway station, those who could afford a car, or could travel with someone. This creates an impression of social closure enacted against existing and potential blue collar workers. This impression comes about not as the direct result of just these two examples, but the cumulative impact of multiple practices which have been seen to either be borne disproportionately by blue collar workers or benefit disproportionately white collar workers.

It is not novel that some people are excluded from jobs at Sellafield, no one site can employ everyone. The changes seen since the site management was privatised provoked a very negative response from industrial trades unions at

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[47] 20/02/2014 Lakes College West Cumbria students

the site in an expression of class solidarity with those denied the privilege of well-paid and secure employment at Sellafield. This has not always been the case:

> *I can give you the reverse of that though in 1984 I was 1 of the organizers of the campaign for jobs for locals. A number of us who were in work who were on Sellafield contracting, and we had a massive the dole queue, believe it or not 1984 Sellafield was at its peak, contract wise 10,000 people, and we still had a large amount of young people, semi-skilled, unskilled, whatever, unemployed. so we organise the rallies etc. we had a march from Egremont to Sellafield, all these young people there was a couple of hundred in the march we went to Sellafield not one of the union convenors or the Sellafield labour force came to meet those people that was the focal point, outside the gates, why have we got unemployment and they weren't interested. They didn't want to know, that was their empire if you weren't in it, tough luck.[48]*

The overarching question raised by issues such as obligation and the changes to social rights in the workplace is; what does the Sellafield site, and the nuclear industry, owe? Does it have an obligation, as a site and by extension do those managing the site have an obligation to take into account the impact of their actions beyond the site boundary? Does an organisation which accounts for nearly £2 billion a year of public money (PAC 2012) have any special obligation to take into account wider social issues and make an effort to ameliorate those? As citizens individually we have obligations, particularly to those who have "lost out" (Faulks 2000: 42), which extend beyond "those responsibilities imposed by law" and are "voluntary and an expression of solidarity and empathy with others" (Faulks 2000: 82).   Clearly from the data here there is among trades unions and the local authority a belief that managers and directors should allow a sense of personal obligation to influence their corporate decision making, but

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[48] 02/12/2013 Copeland Borough Council

that it does not happen under the marketised model for managing the nuclear legacy. The Sellafield site dominates West Cumbria both in terms of the labour market and more widely in social and cultural spheres (Bickerstaff 2012: 2616; Wynne 1992: 284). The results of this, outlined earlier, are evident in the levels of persistent inequality in the area. However, despite the argument that "identifying relationships of casual responsibility" is a necessary condition of concrete political action i.e. making an obligation mean something (Dobson 2006: 182), it is not clear that there is a sense of obligation among executive staff in the nuclear industry towards the pro-nuclear local community, the "nuclear oasis", on which it relies for its continued licence to operate (Blowers 2003: 72).

6.4 – Discussion: Social closure

Changes in the governance of the nuclear industry, as explored in the last chapter, handed both decision-making and economic power to the private sector during their management of the Sellafield site. For West Cumbria by far the most significant of these was the economic power of the Sellafield site being transferred to the private sector. The significant economic power of the Sellafield site and by extension its management enables acts social closure to be brought upon the already disadvantaged in West Cumbria, indirectly incentivised in the pursuit of efficiency savings under the commercial contract with the NDA.

Social closure involves "mobilising power in order to enhance or defend a group's share of rewards or resources" and has two modes, exclusion and usurpation, where the former refers to a group 'closing-off' opportunities for

those below and the latter seeks to "bite into the advantages of higher groups" (Murphy 1984: 548). Exclusion is the main mode of closure, and usurpation a reaction to it and thus a sub-type (Murphy 1986: 32). Closure takes "two chief forms" in property and qualifications, both academic and professional (Matheson 2001: 44). However, social closure, as "another name for exclusion and monopolisation" (Murphy 1986: 584), is contingent on the control of property as the principal exclusory form from which others flow, such as education requirements (Murphy 1984: 557). Credentials are used to form or maintain a hierarchy (Murphy 1984: 562) where "status distinctions" are established to maintain that hierarchy (Bendix 1974: 153) and thus close access to those not in possession of certain characteristics. Most clearly in the workplace the distinctions between "manual and non-manual groups" are sought to be maintained, and beyond merely job differentiation, the two groups diverge further and as a result are differentiated socially and their interests incompatible, such that ultimately white collar workers can be thought of as "a constituent element of the dominant class" (Parkin 1979: 142).

In the case of Sellafield and West Cumbria the control of property which enables exclusory closure (Murphy 1984: 557) is derived from the management contract for the Sellafield site, given the ownership itself remained with the public sector. The gradual expansion of the Sellafield site, coupled with the advancements in the terms and conditions of workers achieved through industrial action and protected by the commercial success of the site in the 1980s and 1990s, while other industries locally declined and disappeared has led to a "labour aristocracy" characterised by generous pay and conditions to which others in the labour market can only aspire (Strümpell 2011: 485). The existence of such a stark divide between those who have access to the

generous pay in the nuclear industry and those who do not poses problems for achieving the "employment and economic well-being" which are "essential conditions" for full participation in the modern citizenry (Sassen 1996: 40). Denying people full membership of their community can lead to discontent which at extremes seen in deeply polarised and divided communities can lead to violence (O'Brien 2010: 589). That is not to say that violence was in the least bit suggested by the data, but it is clear that the denial of what is seen as the conditions for full membership of the community and thus equal status has provoked a hostile reaction in West Cumbria.

In the early 1980s the 'People's March for Jobs' highlighted the issue of unemployment in the UK under the first Thatcher government. The march took 500 people from Liverpool to London, starting on 1st May 1981, taking a month to reach London. In West Cumbria, a local version was organised. However, despite the wider 'March for Jobs' links, as one focus group participant who was an organiser of the local march noted, on arrival at the gates of the Sellafield site the local March for Jobs which went un-met and un-recognised by trade union leaders at Sellafield, in an apparent breach of working class solidarity. Class solidarity in this example was prevented by the "status distinctions" (Bendix 1974: 153) of those seeking to protect their position and favour with the dominant class – trades union leaders at Sellafield and their management. However, the recent changes affected both manual workers and non-workers seeking employment. Contemporary changes were therefore unifying of class solidarity, which is to be expected, as "groups see more readily the illegitimacy of rules responsible for their own exclusion" than they would see the illegitimacy of rules which aimed at the inclusion of others with no threat to them (Murphy 1984: 563). It was clear in the case of Sellafield that the credentialism, seen by

management as a "positional good" and indictor of trainability (van Werfhorst 2011: 524) were viewed by industrial trades unions as a mechanism to maintain the "status distinctions" and hierarchy (Bendix 1974: 153) of manual and staff workers. This fed into a wider array of distinctions between manual and non-manual workers such that they were differentiated socially, their interests incompatible and ultimately the professional staff workers, whose interests were not disadvantaged, were seen as "a constituent element of the dominant class" (Parkin 1979: 142). The provision of jobs to those from outside the area, when management attempted to bring workers, who did not have the required minimum level of qualifications, from the nearby Chapelcross nuclear site added to the sense of exclusion and was seen to undermine the case put forward by management for such changes in the first place. In the context of a site and industry seen to have a special responsibility to the local area and facing demands to ensure a greater proportion of spending of the multi-billion pound budget locally, the defence of the site management of wanting to break their own rules on the basis of better experience for those being brought in and lack of qualifications in the local population was not accepted by the trades unions. This fed into the perception that the wide array of changes were designed to enhance the share of efficiency savings for the companies managing the site.

In discussions on these issues there was a focus on the identity and motivations of the management and other seconded staff from the parent body into Sellafield. Personal career enhancement was spoken of in a derogatory way, as the sole or primary motivation of foreign seconded staff. It is, however, among the primary motivations for people seeking overseas work (Valk et al 2014: 203). The incoming staff were also very specifically referred to in ways which constructed their identity as outsiders, often referred to as 'the

Americans' or simply 'the Yanks' in focus groups and in more general community discourse. The resistance to incoming staff is though unlikely to be ultimately about identity alone. The transfer of best practice, which is what the seconded staff are there to do, can encounter "contextual incompatibilities", in this case a perhaps understandable reaction given that the implication is that the existing staff and practice are not good enough (Hinds et al 2011: 181). In this specific case the fact that the transfer was solely one way, from overseas to Sellafield, contravenes what is considered best practice in this situation (Edwards et al 2010: 631-632). In the long-term, however, changes in the way in which work is organised as a result of the wider changes in the way economies and societies interact will continue to affect both day-to-day work and the location of power in the workplace (Jones 2008: 17). While it has been argued that globalisation had yet to reach a stage where people working in different national environments transcend their own national identity, a stage had been reached where workers identified with their corporation (Omahe 1990: 96; Myoshi 1993: 248-250. For the managerial staff seconded to Sellafield, clearly it was thought by trades' union focus group participants that this was at least partly true. The perception of the mostly American management was that they were working not for the good of the community in which they worked but to further the aims of their employer. These 'glocal elites' have competing calls on their loyalty and as a result of their obligations to their company may be unable to commit to the needs of their host communities (Swyngedouw and Baeten 2001: 827). In the case of Sellafield, the perception among industrial unions and some local authority members was that the managerial staff seconded into Sellafield has a duty to return a profit for their employer, in stark

contrast to the previous situation under nationalised ownership and management.

There are a substantial minority of people in West Cumbria who believe that the area deserves more from government for its service in hosting nuclear facilities for over half a century. In that context, changes which take money overseas, attempt to diminish terms and conditions for workers and weaken democratic control over the management of the site were going to be difficult. The apparently overwhelming public support for the nuclear industry is clearly not unconditional or uncritical. From a distance, or at a cursory glance, the very positive pro-nuclear public opinion could be mistaken for giving the nuclear industry carte blanche to act as it wishes, but this is overly simplistic. There are wide-ranging concerns about the nuclear industry in West Cumbria, held by both those who support and those who do not support the industry. As has been observed elsewhere.

> "As one draws closer, in fact, the silence is not as pervasive as it appears…generalised discontent is present, but lies hidden and controlled" (Gaventa 1980: 252)

6.5 – Conclusion

This chapter has analysed quantitative data to understand, in depth, local perceptions of the nuclear industry. Beginning with public opinion towards the nuclear industry, which is superficially positive, it was revealed that this obscured a greater depth and complexity. The key issue this highlighted, which was raised in the focus groups extensively, was what if anything is West

Cumbria owed from Sellafield and the nuclear industry? This led into the issue of what does corporate responsibility entail for an organisation of that size and what is the role of the unique radiological situation of the Sellafield site and whether that implied a 'risk premium' to any corporate responsibility, with the results demonstrating that confusion has led to the industry failing to properly understand or meet either. The changes brought about by the privatisation of the management of the Sellafield site seemed to confirm the lack of true corporate responsibility for many participants, and it was believed that instead the primary driver for management in a contractorised governance model was shareholder value at the expense of responsibilities to the wider community. The broad-ranging changes, which were seen to benefit certain groups and disadvantage others who both did and did not work on the site led to a solidarity not before seen. The negative reaction to the specific changes made, alongside wider perceptions about a lack of corporate responsibility, are in the context of continuing support for the nuclear industry. This theme – support despite recognition of problems – is the starting point for the next chapter which considers the nuclear future of West Cumbria.

CHAPTER 7 – NUCLEAR FUTURE: LOCAL ECONOMIC DEVELOPMENT IN WEST CUMBRIA

7.1 - Introduction

This chapter analyses local economic development strategies and plans in West Cumbria. Following on from the issues of responsibility and duty considered in the previous chapter, there is no significant attempt made to diversify the local economy away from one heavily reliant on the nuclear industry. The regional ambitions of the nuclear industry are constrained by central government in this still very centrally controlled and regulated industry. As government policy changes, however, plans are modified. Domination of the economic development arena locally by nuclear interests leads to plans which are increasingly focussed on maintaining and expanding the dominance of the nuclear industry in the west Cumbrian economy. Domination is not in this case met by resistance, despite a widespread recognition that the area suffers problems from its overreliance on this single industry. There is no real opposition to the general trend to place nuclear at the centre of economic development plans and perpetuate the current skewed labour market. However, despite their local domination, attempts by local networks of pro-nuclear actors to influence government and bypass economic development organisations at higher scales between local and national are met with little success.

West Cumbria has experienced many different attempts at stimulating local economic activity. These have included being one of the seven areas in the UK designated under the 1945 Distribution of Industry Act to encourage development in the area, and more recently the area was designated as an

Objective 2 area for European Structural Funds in the 1990s. However, this thesis is specifically concerned with the changes seen since the 1990s in the nuclear industry as it transitioned from commercial nuclear fuel services company to decommissioning and legacy management. This provides a delineation in time, and also in purpose. Following on from 1983[1] the nuclear industry began to become more open and engaged in the communities around its sites. One way this manifested itself fin West Cumbria was an industry which began to get involved with wider west Cumbrian economic development, culminating in 1988 with the setup of the West Cumbria Development Fund which was funded by British Nuclear Fuels. This organisation joined the many others which have had a role both during and after its operational life up to the present day.

The first part of this chapter briefly classifies the various organisations of economic development as those imposed by government (top-down) and those which were locally initiated (bottom-up), their relationship to organisations and initiatives before and since, and in doing so their highlights the timeframe of each. This will place in context the exploration of the organisations, their key actors, funding, aims and so on to which the chapter then turns. Finally, the chapter discusses the implications for West Cumbria of the changing landscape of economic intervention over the course of the last 25 years to illustrate the issues for spatial governance and the continued domination of a nuclear future in the region.

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[1] In 1983 Yorkshire Television aired a programme 'Britain's Nuclear Laundry' which linked the nuclear activities in West Cumbria to instances of childhood leukaemia in the nearby village of Seascale. This prompted, the following day in the House of Lords, the government to announce the first of two inquiries – the Black and the Gardner Inquiries – which contained many recommendations, including the need for the industry to be more open, transparent and engaged with the local community. This in part led to the processes behind the creation of the West Cumbria Development Fund and Agency, which is explored in this chapter.

Year																					Form
1988 to	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	>	
West Cumbria Development Fund and Agency															Britain's Energy Coast (2)						Bottom up
																Centre of Nuclear Excellence					
							Strategic Forum ---->		Britain's Energy Coast (1)												Both
						West Lakes Renaissance															
						Cumbria Vision							Local Enterprise Partnership								Top down
		North West Regional Development Agency																			

Figure 7.1 – Timeline and classification of economic development initiatives in west Cumbria

7.2 - Organisations of Economic Intervention

7.2.1 - The Regional Development Agency and its partners

The election of the Labour government in 1997 heralded a change in the way economic intervention by the state within its territory was to be organised and carried out. The Regional Development Agencies Act 1998 established in law nine Regional Development Agencies which began their operation in April 1999. The agency which had responsibility for Cumbria was the North West Regional Development Agency. The responsibilities of the RDAs as laid out in section 4 of the 1998 act were to, broadly, promote economic development and regeneration in their areas. To do this, the RDA had access to government money, and certain powers in section 5 of the act to give financial assistance, dispose of land for less than market value and to form, or acquire an interest in, companies. The RDAs were required under section 7 of the act to formulate, and keep under review, a strategy relating to how it was to go about its activities to achieve its aims. The strategy sat within a complex array of policies, strategies and plans, including the Regional Economic Performance Public Service Agreement (PSA), the Northern Way Growth Strategy, the Regional

Housing Strategy and the Regional Spatial Strategy (incorporating the Regional Transport Strategy) (NWDA 2006: 4). The RES strategy is for 20 years and in details the next three years of actions at regional, sub regional and local levels (NWDA 2006: 4).

The scale of the challenge facing organisations seeking to achieve regeneration in West Cumbria is made clear from the very outset of the RDA's strategy. West Cumbria appears in the document seven times, including in the six point vision statement at the very front end of the document, where one of the central aims of the RDA is that "the economies of East Lancashire, Blackpool, Barrow and West Cumbria are regenerated" (NWDA 2006: 3). The key challenge to overcome for West Cumbria being "remoteness from areas of growth" (NWDA 2006: 17). An "integrated economic plan for West Cumbria" (NWDA 2006: 7) was developed and implemented by the RDA's delivery agency in the county, Cumbria Vision.

Cumbria Vision's plan, covering the period 2006 to 2016, outlines the issues the region faced and their plan for addressing them. The key challenges for the people of West Cumbria were that economic grown lagged the UK, to the point where Cumbria as a whole was the only EU sub-region in the UK to experience economic decline[2], and the 10th biggest contraction[3] (Cumbria Vision 2006: 11). Specific issues for those in the West Cumbrian labour market are that unemployment was above the Cumbrian average and that wages were very polarised between a low wage, particularly in Allerdale which is very reliant on tourism, and a very high wage in Copeland and other industrial areas (Cumbria Vision 2006: 13). Cumbria Vision's plan focussed on "improving the fragile

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[2] While the rest of the UK economy grew, including every other county.
[3] The only other sub-region in the EU not in the former communist bloc to decline was Berlin, Germany (9th).

economic prospects of the area" through exploiting nuclear decommissioning which "offers opportunities of regional/national significance" (NWDA 2006: 35). The focus on nuclear decommissioning as the solution to the economic problems of West Cumbria, when it is one of the causes of the problems, is an interesting strategy given that Cumbria Vision recognise that overdependence on Sellafield was problematic (Cumbria Vision 2006: 29). However, at the time as will be seen in the rest of this chapter, national policy towards nuclear developments placed significant constraints on an industry which is both very nationally regulated and at the time was in decline.

7.2.2 - Britain's Energy Coast Masterplan

Cumbria Vision's proposed approach to the issues facing the West Cumbrian economy was split into two broad categories. Firstly, supporting capital projects through West Lakes Renaissance, an urban regeneration company and secondly, providing financial support and planning with partners, in particular working to deliver the 'West Cumbria Masterplan' with local partners (Cumbria Vision 2006: 29) to capitalise on nuclear and related opportunities and diversify the economy.

The drive for the masterplan came from the West Cumbria Strategic Forum. The Strategic Forum was established in 2004, chaired by a minister, and included representatives from government departments [4]:

- Government Departments (approx 10);
- the Nuclear Decommissioning Authority;
- Regional and Cumbria wide partners (approx 10);

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[4] The full list of members can be found in Appendix F.

- Local Authorities and other West Cumbrian partners (approximately 10); and,

- Local MPs.

The Memorandum of Understanding "committed all parties to 'West Cumbria proofing' key policy and strategy decisions" in the context of a declining employment profile at Sellafield while also creating "the definitive plan for the future regeneration of West Cumbria" (CBC 2007: 1). The work, funded by the Nuclear Decommissioning Authority through West Lakes Renaissance and managed by Cumbria Vision, involved a study of the "economic, social and environmental needs and challenges facing West Cumbria" (CBC 2007: 2). This initiative is classified as neither top-down or bottom up due to the complex national/local partners, funding and management of the work. The Executive Summary of that evidence base was published in 2007, titled Britain's Energy Coast: A Masterplan for West Cumbria"

The twenty year plan aimed to strengthen the local economy and offer a "lifestyle of choice" rather than one of fate, and to do so achieve four key objectives (BEC 2007: 3):

1. Build on existing "nuclear assets" to become a "globally recognised" business cluster for "nuclear, energy, environment and related technology";

2. Improve connective infrastructure to strengthen the local economy and help attract a more diverse, growing population;

3. "Project a positive image to the world" which balances existing and desired technologies such as nuclear facilities with the "outstanding"

natural environment to improve attractiveness for both residents and visitors; and,

4. Reduce "deprivation, inequality and social immobility" by providing opportunities locally for all.

To achieve the reduction of inequality, the ultimate aim of the masterplan, involved the pursuit of four broad areas of activity. The first three are the other three objectives; exploit nuclear opportunities, bringing forward central government infrastructure investment and establishing a brand. In addition, the masterplan saw a role for itself as providing a roadmap for "aligning existing budgets and activities" (BEC 2007: 40) to achieve economic growth.

7.2.3 - Britain's Energy Coast Blueprint

The West Cumbria Development Fund and Agency were two organisations borne out of a review conducted by consultants WS Atkins on behalf of BNFL, Copeland Borough Council and Cumbria County Council in 1986-87. The purpose of the review was to "consider additional ways of promoting the economy, environment and image of West Cumbria" and resulted in recommending "organisational arrangements" to meet that aim, which led to the fund, agency and other organisations being established (WS Atkins 1987: 1).

The core organisation of the West Cumbria Development Agency was built by transferring the staff from the existing Enterprise West Cumbria, which itself was built upon the preceding Moss Bay Enterprise Trust (WS Atkins 1987: 3). The Development Fund, on the other hand, was a novel structure. As a consequence, the Agency had a large board made up of a range of interests

from public, private and independent members[5] in contrast to the smaller, BNFL dominated Fund board which has its membership restricted to Copeland Borough Council, Cumbria County Council and British Nuclear Fuels (WS Atkins 1987: 4).

The justification for the scaling of the financial intervention though the Development Fund on Copeland is not clear in the report. The report simply states although discussions had been conducted "by agreement at a chief officer level" that "Allerdale District Council is at this stage not actively involved" (WS Atkins 1987: 15). In contrast with the position of Allerdale council discussions with Copeland council had also included the political leader of the council (WS Atkins 1987: 16). While the report hints therefore at tensions between the district councils, this was confirmed by one of the people closely involved with the 1987 report:

> "There was at the time a very foresighted leadership of Copeland council which wasn't shared by Allerdale."[6]

What changed this position was, according to the interviewee, the funding from BNFL and other sources of £10 million was secured rather than just being in prospect[7]. This however did not alter the board structure in terms of the balance between 'types' of member. BNFL still provided the money and had a plurality on the board, including the position of Chairman. The influence of BNFL was not something they necessarily wished to make so starkly plain, as the contrast between a draft version of a review of the initiative in 1992 and a

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[5] This remains the standard practice for development agencies, as the guidance for LEP boards demonstrates (HM Givernment 2014: 5).

[6] Interview – 21 September 2016

[7] Interview – 21 September 2016

final version makes clear (see figure 7.2). However, regardless of the numbers

on the board, BNFL was the primary funder of the development fund.
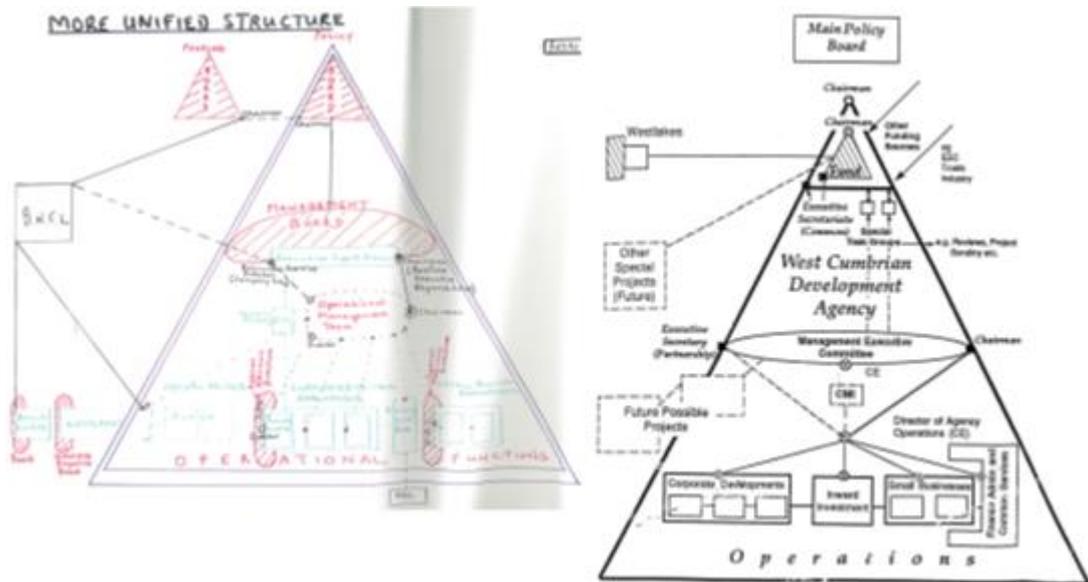
Figure 7.2 – Diagrams from two versions of the 1987 WS Atkins Report establishing the West Cumbria Development Fund and Agency
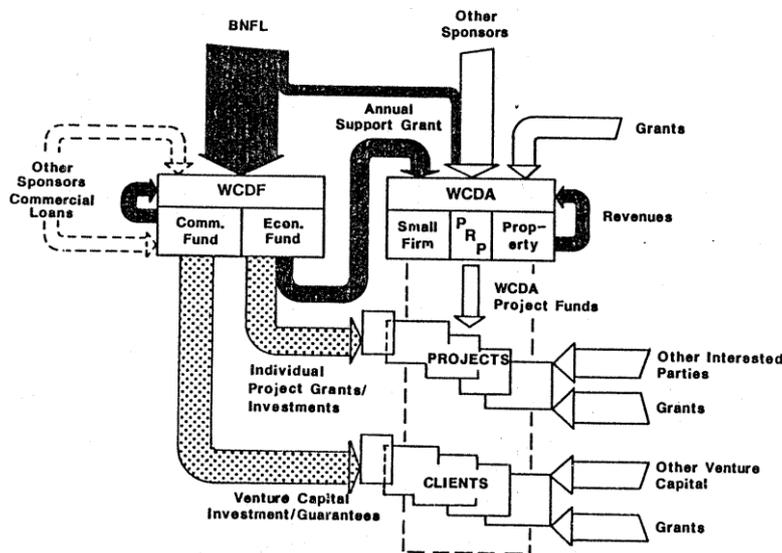
Figure 7.3 – Funding flows for the West Cumbria Development Agency and Fund (WS Atkins 1987)

The dominance of BNFL in the board memberships of the development fund,

and their presence on the boards of the development agency, research

institutions and other organisations remained almost unchanged for over 25 years. Following the demise of BNFL in 2008, the development fund continued to have a nuclear plurality on its board, but with the NDA, NMP and Sellafield sharing the three places. However, the issue of dominance and influence was one which was both meant to be addressed by this new structure, but one which would come back to the fore much later. A local political actor close to the West Cumbria Partnership explained:

> "From the BNFL side, there was a desire to get away from handing money out directly. Too many questions about pet projects and individual influence, and no big aims to any of it, just what came along and what some director fancied."[8]

Whether or not a majority of non-nuclear board members actually changed what would or would not receive support it is not possible to know. However, the potential impact of the dominance of nuclear interests on the activities of the development fund is illustrated by the differences between the Britain's Energy Coast Masterplan and Blueprint, fifteen and twenty years later.

The Energy Coast masterplan delivered many of the capital projects it set out to bring forward from government, such as road improvements, a new acute hospital and taking forward new nuclear reactors. Following the 2010 general election and emergence of a Conservative/Liberal Democrat coalition, Regional Development Agencies were abolished, and so too were the delivery agencies in Cumbria[9]. The RDA and West Lakes Renaissance, along with the West Cumbria Strategic Forum, had been central to developing and implementing the

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[8] Interview, 04 July 2016.
[9] West Lakes Renaissance, Cumbria Vision and West Cumbria Vision.

masterplan. The Forum met only twice following the 2010 election in June and December 2012 before sitting idle and sometime around the 2015 election being declared no longer operational[10]. The achievement of many of the initiatives and the abolition of its main responsible agencies led to a 'second phase' for the Energy Coast branding. The development fund and agency rebranded themselves as 'Britain's Energy Coast Cumbria' and in 2012 published 'The West Cumbria Economic Blueprint'.

The organisation, through its blueprint and activities, is aimed at "capitalising on our strengths, helping our businesses to diversify, to innovate and grow alongside ensuring that West Cumbria delivers to its full economic potential" (BEC 2012: i). The four objectives of the blueprint are to build on "our expertise" and secure global nuclear investments, diversity the businesses in the region, provide necessary investment in physical infrastructure and grow the asset base of West Cumbria (BEC 2012: vi). These objectives, while seeking region-wide improvements, are particularly focussed on what is termed the "Britain's Energy Coast Innovation Zone" and the bulk of the blueprint focusses on a "small number of transformational actions within the Innovation Zone" in the areas of research, business support, skills and physical infrastructure (BEC 2012: vii). In addition to those activities, and developing further the work from the masterplan, the Blueprint includes a "branding and marketing strategy" (BEC 2012: i) for the innovation zone. So, in short, the work in the blueprint is more focused on a smaller spatial area, and has its own resources rather than bringing relying solely on bringing forward government investment. While there are some key areas of difference to the masterplan, which are analysed later in

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[10] See the government web-portal (https://www.gov.uk/government/groups/west-cumbria-strategic-forum; accessed 16 September 2016)

the chapter, it is definitely a continuation in spirit. The underpinning idea of taking a sub-national region, building upon its key characteristics from which it may derive a competitive advantage and making that into a global brand is the thread that connects the two together. It does however become very explicit in the blueprint. Indeed, four global themes emerge from analysis of the text of the blueprint:

1. 'Global words' – the document makes repeated reference to 'global' and 'international';

2. Competitiveness, competitive advantage and expertise – a strong and recurring theme throughout, alluding to the nature of a networked economy where areas compete with each other across vast distances, the unspecified 'competitor locations' (BEC 2012: 35);

3. Connections and access to global markets – importance is places on broadband, ports, transport links, including development of a nearby airport, to connect West Cumbria to global markets; and

4. Branding and selling the area overseas.

This explicit focus on going global is a change in the language used from the masterplan to the blueprint. Competitive advantage is a theme in both documents, but while the phrase itself does not appear at all in the masterplan, it appears 26 times over a 42 page document in the Blueprint. Taking that theme of a globally tradable geography begs the question; what exactly is being sold?

The branding of West Cumbria as the Energy Coast is a common theme between the masterplan and the blueprint, but the way in which this is done and enacted is very different in the later incarnation of the brand.

The brand is complex. A long standing issue with the economy of West Cumbria is that it is very reliant on the nuclear industry, but the dominance of that single industry has implications for external perceptions of businesses looking for investment locations. In the 1990s research conducted for the Confederation of British Industry revealed that, in addition to the geographical barriers to access, there was a perception among executives polled that the workforce was small and lacked a diversity of skills (CBI 1995: 8). This is unsurprising in an area where, despite no particular difference in the educational profile of the area, high wages are paid (see previous two chapters). The masterplan did seek to expand beyond nuclear industries into renewable energy technologies too, it did this by building on the nuclear industry:

> West Cumbria's coast provides good opportunities for other renewable energy generation (e.g. wind, tidal). Whilst other regions have similar coastal areas, *none also have the concentration of expertise and local support for power generation and related infrastructure.* (BEC 2007: 17, emphasis added).

Places have become as managed as if they were products or brands (Gertner 2011: 112), and in making this shift to commodifying geography in a competitive networked global economy, those creating the brand are as important as those consuming it. Branding a place, and selling it elsewhere, makes choices about what in a place is worth highlighting. The choice of what specific features of a place it is from which it derives its competitive advantage is an important economic and social choice. In the case of the Energy Coast branding, while the initial masterplan does seek to diversity West Cumbria away from being seen as solely a nuclear area to a more broadly energy related economy as

explored earlier in this chapter, this is founded on retaining and enhancing a strong nuclear presence. In practice, as this brand and plan were developed, implemented and became the Energy Coast Blueprint the nuclear element of the economic future for West Cumbria becomes only more dominant. In the first masterplan mentions of nuclear new build and renewables are given the same weight, albeit with the caveat that nuclear may be subject to change in government policy. Indeed this did happen, as will be explored in greater detail later in this section, and in the 2012 blueprint there are two mentions of renewables and twenty-five mentions of nuclear new build. Therefore, based on the evidence of the content of both the masterplan and the blueprint, any shift away from a nuclear future for West Cumbria was superficial.

In addition to the way in which places are described, there are also actual concrete projects which are characteristic of a place which is seeking to 'go global'. Rather than merely supply the territorial conditions necessary to reproduce productive spaces (such as housing, transport etc), the glocal state with global ambitions will now "restore, enhance, intensify and restructure their capacities as productive forces" which will include things such as "public-private partnerships, labour retraining programmes, science parks, conference centres, waterfront redevelopment schemes, technology transfer projects" and many more which based on the "construction of 'territorially rooted immobile assets'" to enhance productive capacity of the region (Brenner 1995: 15). Promotion of "the productive capacities of the elites and regions through the construction of 'territorially rooted immobile assets'" is "not limited to … world cities" (Pelkonen 2005: 687). The creation of new urban spaces also goes beyond just enhancing productive industrial infrastructure to also include the "physical manifestations of the [regions] (desired) global qualities" which could be

"festivals, sporting events, buildings, parks, squares, roads" and more and involve "imagineering…a political as well as economic project in which particular actors, classes and coalitions pursue their own visions of global status and connectivity" (Paul 2004: 573). In the case of West Cumbria, the 'imagineering' is tailored to the area. While major cities have their events such as the Olympics, West Cumbria still sought, and through the Energy Coast funded events with some status and sought to sell the area overseas:

> *Its support for projects which helped West Cumbria stage the Rugby League World Cup and Tour of Britain helped profile the region as a great place to visit." (BEC Press Release, 5th February 2014)*

At the same time as hosting events to raise the profile of the region, the branding and selling of the area – a unique feature of the networked economy (Paul 2002: 466) – was taken 'on tour':

> *"BEC played a leading role in promoting West Cumbria as a business and investment destination on the national and international scene supporting West Cumbrian companies on a successful trade mission to Japan and Korea, a high profile reception in Westminster and participation in the Industry & Parliament Trust Energy Commission hearings and report" (BEC Press Release, 5th February 2014)*

However, although going overseas and describing the activities of BEC in the way they are, so specifically international, is a recent development, the sorts of infrastructure talked about earlier as necessary to be competitive is not new. In its incarnation before becoming Britain's Energy coast, the West Cumbria Development Fund and other agencies were involved in some significant programmes of infrastructure development consistent with supplying the

territorial conditions necessary for attracting and retaining, in particular, global nuclear related businesses. Indeed, many of the developments the glocal state might undertake to fulfil its global ambitions, according to Brenner (1995: 15), are evident in the area such as a science park and waterfront redevelopment undertaken by a public-private partnership. In this area there has been a redevelopment of a formerly industrial dock into a tourist marina and accompanying high-quality accommodation aimed at professionals in the nuclear industry. This is a very visible transformation which highlights for those who have lived in the area since prior to the year 2000 the significant economic changes and the decline of traditional industries such as fishing this and other areas in the UK have experienced. The move from a dilapidated, industrial dock to a visitor attraction, and its promotion as a key asset of the town of Whitehaven is a constant reminder of the new economy. This new economy is further demonstrated by the Westlakes Science and Technology Park. Originally developed in the early 1990s by British Nuclear Fuels and managed by a company called Westlakes Properties Limited, it subsequently became a subsidiary of Britain's Energy Coast Cumbria and now is the only remaining part of that organisation (including the development agency and fund) following its transition to a commercial company. The park provides serviced and maintained commercial accommodation to firms, mostly working in the nuclear sector. It was an attempt to create a 'technopole' in the region, which is a "strategic urban places for industrial development, such as industrial and science parks, office centres, transport terminals and cultural facilities" which can take many forms such as being focussed on high technology industry, non-entrepreneurial academic activities, or a hybrid of these as is the case in West Cumbria (Pelkonen 2005: 698).

The productive infrastructure and the cultural offer are also both important in less tangible ways. The pursuit of a "'progressive competitiveness' strategy" (Panitch 1994: 82) of global connectivity mobilised by a shared commitment to a hegemonic project takes the form in West Cumbria of the idea of the Energy Coast. New nuclear facilities, connective infrastructure such as road improvements and investment in the Port of Workington, and all the others already mentioned "narrate and advance a particular definition and interpretation" of the region which allows the dominant group to "impose their vision upon space […of…] global connectivity, and wealth embodied in transnational capital" (Paul 2004: 575). It is the purpose of building infrastructure and so on not only to provide the physical requirements for business, but in doing so create in reality the marketable place that can be sold locally and globally. Through 'imagineering' West Cumbria as the Energy Coast, it is possible to mobilise local support which is particularly useful given the close involvement of democratically accountable local politicians in both the public-private partnership which developed many of the schemes, but also in their active support for the wider vision which has included its incorporation into planning and other policies of the local authority.

The importance of place-making and imagineering is also demonstrated by the rise of the local 'trade mission'. In the networked economy, where regions and places are left to promote their own economic interests and sell themselves abroad, there needs to be a brand to sell. Particularly since the 1980s there has been a focus on "foreign investment, corporate headquarters and trade promotion" for the global region (Paul 2004: 578). In undertaking works to the built environment regions not only improve industrial infrastructure to offer transnational business but also a wider brand to sell. In the case of West

Cumbria the developments of the science park, waterfront, new connective infrastructure and the plans for a large expansion of the nuclear sector and so on are sold overseas through, among other activities, the sending of trade missions to Asia (North West Evening Mail 22 November 2012).

7.2.4 - Centre of Nuclear Excellence

Following the demise of the Britain's Energy Coast organisation as an economic development body, the space left has begun to be filled by a new institution – the Centre for Nuclear Excellence (CoNE). CoNE is an emerging concept in West Cumbria which is not, as the name suggests, an actual physical centre or institution.

The novelty and lack of an actual structure for the institution makes it difficult to appreciate what the centre is actually for, due to a lack of any formal documentation. However, through access to e-mail communications between its members, presentations given at public events and contributions to other documents, it is possible to identify some salient issues that this emerging institution poses for economic development, power and spatial governance in West Cumbria. The first of these is the focus of the organisation, the second being the continuing relevance of central government policy as a constraint and the third the multi-level governance environment which has made scale-jumping efforts challenging.

The aim of the centre is to take on the vacated role of coordinating activities and branding for economic development in West Cumbria. The centre describes this aim as being "to provide a coherent planning, organisation and communication effort to make the Cumbrian nuclear industry a UK centre of

excellence and a world leader in nuclear services" (LEP 2016: 21). Professor Paul Howarth, the Chairman of the Centre for Nuclear Excellence, characterised the broader aim of the organisation in rather more candid terms:

> "The dialogue has been, *'you owe us because we had to put up with nuclear for 60 years'*. CoNE looks to turn that around."[11]

As for previous exercises to brand West Cumbria in a certain way, the CoNE relies heavily on "a supportive community that has worked with and understands the industry"[12] as one of the key sources of competitive advantage, which the CoNE recognises is not a transferrable asset. Speaking of the support for nuclear, the Chairman of CoNE said "You can't build that elsewhere"[13]. This very explicitly nuclear organisation is merely continuing the trend seen from the BEC masterplan and blueprint of an ever shrinking focus, both in terms of industry, from a broad energy focus to a very narrow nuclear focus, and spatially in West Cumbria from the majority of the two local authorities to the 'core' industrial area.

The full range of nuclear developments that the Centre wishes to pursue for West Cumbria extend beyond existing plans for new power generation capacity and into advanced reactors and new nuclear fuel cycle activities. However, as for previous local economic plans, the CoNE is constrained by central government policy:

> "The longer term mission of CoNE is that additional projects will follow Moorside. Although those new projects are subject to UK policy decision" (LEP 2016: 23)

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[11] Speech by Professor Paul Howarth at the 1st Cumbria Nuclear Conference – 22 September 2016
[12] Speech by Professor Paul Howarth at the 1st Cumbria Nuclear Conference – 22 September 2016
[13] Speech by Professor Paul Howarth at the 1st Cumbria Nuclear Conference – 22 September 2016

A key part of those future projects is about more than nuclear energy. The legacy of spent nuclear fuel reprocessing and nuclear fuel manufacture in West Cumbria means that any new work in that area would be ideally places in the region:

> "Fuel cycle support infrastructure can only be located in one unique place: Cumbria"[14]

In its attempts to persuade government of the case for CoNE and its objectives, the centre has gone through two distinct phases of activity. In its infancy, the centre sought to take its case directly to government, and after this proved unsuccessful they have been forced to work within government's preferred structure, the Local Enterprise Partnerships. The attempt by the centre to 'jump scales' (MacKinnon 2010: 24) and in doing so bypass the multi-level hierarchy established by government (Entwhistle et al 2014: 322) was unsuccessful.

On 2 February 2015 people involved in the CoNE project met with government departments[15] in Whitehall. The purpose of the meeting was to brief key government departments on the purpose, mission and vision for CoNE – how it can support the Cumbrian economy by delivering existing missions, and how commercial benefit for the UK can be derived from these and potential future missions. However, these meetings did not go well:

> "There were some specific areas where advice and feedback were provided which will help to tailor our future strategy and external messages."[16]

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[14] Presentation at nuclear energy business opportunity conference 2015 - 11 May 2015
[15] Department of Energy and Climate Change, Department of Business, Innovation and Skills and the UK Trade and Investment organisation.
[16] Email from CoNE Chairman to centre members – 08 March 2016

In particular the attempt to circumvent the LEP were unsuccessful and rebuffed by central government, with the centre being told that CoNE needed to "demonstrate we have listened to government when we meet with them again"[17] in particular by articulating "the value of CoNE to Cumbria"[18] which was not clear. The attempt to demonstrate the centre and West Cumbria's importance and value on much broader national and international scales, separately to the structures set up by government in the LEPs, was not of interest to government. More recent statements have underlined the change:

> "Regionally, we must work within the LEP. CoNE is the means by which the nuclear industry engages with the LEP and also through this nationally with government."[19]

The spatial focus of the CoNE is not clear, as it is still an emergent initiative with little documentation. However, from how it was described by its chairman, the intervention has a focus on the core nuclear areas, as it is intended to be a "technology led economic development"[20] initiative.   This would be expected, if as is common for processes of rescaling and institutional change, new institutions are shaped by what came before (Schmidt 2008: 304), otherwise referred to in historical geography as 'path-dependency' (Brenner 2001: 609). The Energy Coast blueprint rescaled the focus of economic intervention from the Masterplan to a smaller, more core-nuclear geography. Figure 7.4 shows the original 2007 masterplan focus, stretching from Maryport in the north to Millom in the South. Red lines delineate the focus of the 2012 intervention, from Workington in the North to just south of Sellafield. The rationale for this less extensive geographical scaling was that

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[17] Email from CoNE Chairman to centre members – 08 March 2016
[18] Email from CoNE Chairman to centre members – 08 March 2016
[19] Speech by Professor Paul Howarth at the 1st Cumbria Nuclear Conference – 22 September 2016
[20] Speech by Professor Paul Howarth at the 1st Cumbria Nuclear Conference – 22 September 2016

"The Innovation Zone will broadly cover the area in which the major research, business, labour force and employment assets of the area are located. This will act as a spatial focus for investment… Businesses within this area draw their labour force from a wider area of West Cumbria and as such the economic importance of this area is significant in employment terms." (BEC 2012: 22)

Given the closeness of the CoNE aim, as technology led innovation' focussing on nuclear, combined with the tendency to path dependency in rescaling processes, it is likely the CoNE will focus on a similar or smaller area than the Energy Coast blueprint did.
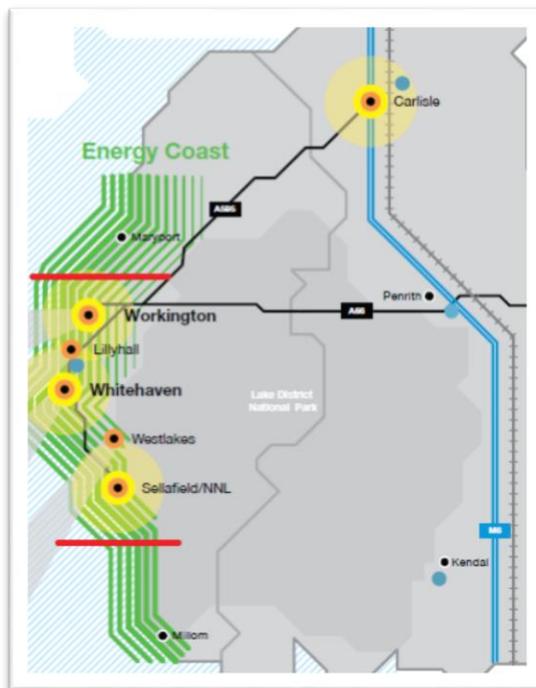
Figure 7.4 – Geographical focus of the Energy Coast intervention from the 2007 Masterplan (with the 20102 blueprint rescaled focus delineated in red) (BEC 2007: 13)

7.3 - Government policy and constrained freedoms

That the energy coast masterplan did not make much in the way of reference to nuclear power is not surprising. The national policy climate towards the nuclear industry was in a state of transition between 2007 and 2008 for both new build and waste management. The Britain's Energy Coast Masterplan was published in 2007, but the national policy position for nuclear power was not settled at the time. In this section those issues are explored and analysed in terms of their implications for localism in West Cumbria.

In 2003 the Government seemed to declare an end to nuclear power generation in the UK when it declared that while nuclear power had the potential to contribute to a low carbon energy mix, it was not attractive on economic grounds at that time (DTI 2003: 44):

> "Nuclear power is currently an important source of carbon-free electricity. However, its current economics make it an unattractive option for new, carbon-free generating capacity and there are also important issues of nuclear waste to be resolved. These issues include our legacy waste and continued waste arising from other sources. This white paper does not contain specific proposals for building new nuclear power stations. However, we do not rule out the possibility that at some point in the future new nuclear build might be necessary if we are to meet our carbon targets. Before any decision to proceed with the building of new nuclear power stations, there will need to be the fullest public consultation and the publication of a further white paper setting out our proposals."

This position as reviewed in January 2006, and led to the publication of a report in July of that year, the 'Energy Challenge Report' (DTI 2006). This review

supported the building of new nuclear power stations. However, Greenpeace successfully challenged the review in the High Court on the basis of not having undertook "fullest public consultation" as set out in the 2003 White Paper. The government published a new white paper 'meeting the energy challenge' in May 2007 following that High Court judgement which stated that:

> Alongside this White Paper we are publishing a consultation document setting out the information and evidence that we have considered in reaching the preliminary view that it is in the public interest to give the private sector the option of investing in new nuclear power stations as part of our strategy to tackle the challenges of climate change and security of energy supply. (DTI 2007: 180)

Whilst the policy position on new nuclear power was unclear, the Masterplan was developed and published. That may explain why, despite being a masterplan for an energy coast in an area with a long history of generating nuclear power the reference to a new generation of nuclear stations is done very carefully:

> In the longer term, UK policy on waste and nuclear power generation will also present strong opportunities for West Cumbrian firms (BEC 2007: 20)

The development of new reactors was, however, posed not as an opportunity but almost as a sales pitch:

> Subject to Government endorsement of a future role for nuclear generation, this fuel could be used to power two 1.6 GW(e) fourth generation reactors for up to 60 years. If these were built near Sellafield they would generate up to £20 billion inward investment without the need

for Government funding and avoid the creation of 0.5 billion tonnes of CO_2. Furthermore they could provide a path to future energy sources such as hydrogen, thereby augmenting even more the overall vision of Britain's Energy Coast. (BEC 2007: 21)[21]

Later in that section, under the 'actions required' there was no mention of the pursuit of nuclear new build as an action (BEC 2007: 23). There could not possibly be, given government policy at that time had been delayed significantly by the High Court judgement forcing government to re-consult on nuclear power policy. However, in January 2008, the government published a second energy white paper specifically dealing with nuclear power, "Meeting the Energy Challenge: A White Paper on Nuclear Power". The Prime Minister at the time, Gordon Brown, stated in his foreword that following consultation, and taking into account the pressing issues of energy security and carbon reduction stated in the May 2007 white paper (DTI 2007: 180), that the government had now decided to allow new nuclear power stations to be built:

> "We have therefore decided that **the electricity industry should, from now on be allowed to build and operate new nuclear power stations**, subject to meeting the normal planning and regulatory requirements."
> (BERR 2008: 4, emphasis added)

This change in policy from the 2003 position was driven by different imperatives. The stated case from government in the 2007 white paper for wishing to allow new nuclear was as explored, to "tackle the challenges of climate change and security of energy supply" (DTI 2007: 180)[22]. In addition

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[21] Almost identical text appeared earlier in the document (BEC 2007: 17)
[22] The Secretary of State responsible at the time, John Hutton, would go on to become president of the Nuclear Industry Association, the trade body for nuclear industries in the UK, as Lord Hutton after leaving the House of Commons in 2010.

pressure was being placed upon government to allow nuclear power for reasons of local concern to West Cumbria (as is clear in the documents analysed in this chapter).

No doubt industry too was lobbying the government at the time – the term 'nuclear renaissance' was used to describe a renewed interest in the technology across many countries in the 2000s following the "fluctuating fortunes" and a "period of decline" for nuclear power (Nuttall 2004: 1). It was in the united states that the term was first used, in 1990, but did not reappear until 1999 and it was not until this second outing that "the idea took hold" (Nuttall 2004: 2). In the UK, as policy changed some years later, the key difference was that engineering-led innovation was out, market driven energy development was in (Nuttall 2004: 2-3) as the 2008 white paper makes clear that "the electricity industry should, from now on be allowed to build and operate new nuclear power stations" (BERR 2008: 4). With these changes, actors and institutions in West Cumbria begun to find someone, and somewhere, to build a new nuclear power station.

In fact there were two developers and three sites initially put come forward, but under very different circumstances and with very different outcomes. The process by which sites were chosen for new nuclear developments involves land being nominated into a Strategic Siting Assessment (SSA) which is part of the reforms of the Planning Act 2008 and process by which sites are assessed for suitability for deployment of new reactors before the end of 2025 (BERR 2008: 3). The very basic requirement is that the site be suitable on a range of environmental and technical grounds, and that it is either nominated by a "Credible Nuclear Power Operator" (CNPO) or accompanied by a letter from such a CNPO who currently operate nuclear or other major power stations

(BERR 2008: 9). In all cases the nominator or the CNPO have to demonstrate that "have taken steps to engage local communities living in the vicinity of the nominated site (including the owner(s) of the nominated sites)" (BERR 2008: 9). On these two points, which are the first two conditions of the SSA process, the three nominated sites in West Cumbria differed.

The three sites initially nominated were land adjacent to Sellafield, land near Sellafield adjacent to the village of Braystones and land approximately 20 miles south near the village of Kirksanton. The Braysones and Kirksanton sites were nominated by German utility RWE, led to significant opposition at their own public meetings and at special public hearings organised by the Department for Energy and Climate change and were ultimately not successful in being adopted (Haraldsen et al 2011: 42). The nomination of the site next to Sellafield, however, was successful and well received at public consultations (Haraldsen et al 2011: 43). This may reflect support for Sellafield as a nuclear site, and it has been seen elsewhere that even where local communities are supportive of nuclear developments, they still have specific ideas about where those should belong (Wylie et al 2016: 153). On the other hand, the process for the nomination of that site was very different to that followed by RWe for its two sites.

After government policy on nuclear power became clear, work began to nominate land adjacent to Sellafield for the siting of new reactors. The nomination was pursued by the 'Cumbrian Partners' with the work required to nominate the site was taken forward by AMEC Nuclear and West Lakes Renaissance, funded from the West Cumbria Development Fund and the final nomination submitted by the Nuclear Decommissioning Authority as the land owner (CBC 2009: 2). Engagement with local stakeholders was led by

Copeland Borough Council and involved a series of pieces of information, meetings near the affected area and a large public meeting in the borough town, Whitehaven (CBC 2009: 3). The reason stated for the pursuit of this nomination was that the development of new reactors was "a key element and beacon project of the 'Energy Coast' masterplan" (ABC 2008: 2). Indeed, Copeland Borough Council supported the new build nomination at Sellafield on the basis of that masterplan:

> The Energy Coast Plan, which is fully supported by this Council, takes a positive stance in relation to the development of new nuclear power stations in Copeland as part of the transition of our local economy (CBC 2009: 2)

However, the masterplan does not commit to the building of reactors of this kind, but of the next generation of nuclear reactors expected in the 2020s to use reprocessed nuclear fuel products:

> "Subject to Government endorsement of a future role for nuclear generation, this fuel could be used to power two 1.6 GW(e) fourth generation reactors for up to 60 years. If these were built near Sellafield they would generate up to £20 billion inward investment without the need for Government funding and avoid the creation of 0.5 billion tonnes of CO_2. Furthermore they could provide a path to future energy sources such as hydrogen, thereby augmenting even more the overall vision of Britain's Energy Coast." (BEC 2007: 21)

The masterplan, therefore, does not "take a positive stance" (CBC 2009: 2) towards new build in this decade and nor does new build constitute "a key element and beacon project" (ABC 2008: 2). The reason the masterplan did not

contain any plans for so-called "Generation III+"[23] reactors is however clear; government did not at that time have a settled policy on nuclear power generation. The masterplan does however clearly favour some form of nuclear new build in the area at some future point in time[24]. This tension between locally desired actions and government policy constraints characterises localism in the UK, which is an "uneasy relationship between centralised powers, conditional decentralisation and fragmented localism" where central government constrains the freedoms of local areas to "undertake innovative actions" (Bentley and Pugalis 2013: 257). As a result, areas have to negotiate these freedoms with government, the problem is that while for many examples of what sub-regional areas might seek from government, such as tax raising powers, devolution of certain budgets, and co-operating on planning matters (for a comprehensive list of new localism powers, see Bentley and Pugalis 2013: 262) the ability to independently develop nuclear power or other nuclear developments is most certainly not something for which the central state has abandoned a role. Urry's (2010: 355) conception of a world of global flows, where places seek to become nodes by developing hub airports, improve telecommunications infrastructure or "they may even seek to reprocess nuclear waste products", conceals the role of the central state in such significant developments[25]. Areas may seek, but even for airport developments, the state has not transferred its authority entirely. As for nuclear, significant transport

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[23] These 'Generation III+' reactors are basically incrementally improved versions of a type already in operation in the UK at Sizewell B (World Nuclear Association 2016 - http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-power-reactors/advanced-nuclear-power-reactors.aspx.

[24] There has already been interest in 'Generation IV' reactors being sited in west Cumbria, indeed Hitachi and others have expressed interest in doing just that (Hitach 2014 - http://gehitachiprism.com/ge-hitachi-and-iberdrola-collaborate-on-uk-prism-project/)

[25] The Sellafield case is likely what John Urry was referring to here. Urry is a sociologist at nearby Lancaster University and has published on West Cumbria, Sellafield and the nuclear industry – see Urry (2002) for example.

infrastructure is covered by the Planning Act 2008, and likewise has its own policy statement covering major road, rail, harbour and airport expansions. That, however, does not preclude local areas seeking such significant infrastructure from negotiating with government. If we accept what the local MP says, then government policy change was in part driven by West Cumbria. Even in policy areas as significant and sensitive as nuclear, the same principle of negotiated, and constrained, freedoms applies.

The BEC Blueprint, published in 2012, further demonstrates the constraints of government policy on local action. The Blueprint contained only six references to waste, with three of those being non-nuclear, and the remaining three references to nuclear waste related to the decommissioning of Sellafield and the export of those skills. The 2007 Masterplan contains 14 references to radioactive wastes, even describing the "possibility of Copeland hosting facilities for the nation in the future (BEC 2007: 14) and that "in the longer term, UK policy on waste and nuclear power generation will also present strong opportunities for West Cumbrian firms" (BEC 2007: 20). The constraint in this case came from the West Cumbria being a part of the discussions around site for the disposal of higher activity radioactive wastes, and the very significant issue at the time of not wanting to be seen to 'pre-determine' the outcome of that process.[26]

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[26] As a Copeland Borough Councillor at the time (from 2011-2015), the requirements on what I was personally able to say on that subject were strict, and more so for those in positions of executive authority as those who developed the Energy Coast blueprint were.

7.4 - Accountability and democracy

Local policy is affected by the changes in economic organisation and the associated adjustments in governance. Indeed the Energy Coast blueprint states specifically that "a supportive planning policy framework" (BEC 2012: i) is important to the success of the project. Thus, in the case of Copeland, it has specific planning policies relating to the nuclear industry and key employment sites, including the zoning of land for future nuclear development and associated works[27]. The Local Plans of both Allerdale and Copeland Borough Councils, which set out the development management policies and site allocations for 2013 to 2028, assert that in both cases their Local Plans and Development Management Policies will "assist delivery of" both the Masterplan and the later updated 2012 Britain's Energy Coast Blueprint (CBC 2013: 2; ABC 2014: 6). Specifically, Copeland Borough Council's Local Plan and Development Management Policies documents, along with the Site Allocations, "particularly assist delivery of … Britain's Energy Coast: A Masterplan for West Cumbria (sometimes referred to as the 'Energy Coast Master Plan') as refreshed by new work on the West Cumbria Economic Blueprint (2012)" (CBC 2013: 2). Therefore, in Copeland and Allerdale, both the Energy Coast masterplan and blueprint influence land use planning by the local state by shaping council development policies. This brings questions about accountability, and the role of democratic decision making, which apply not just to these two initiatives but to others too, sharply into focus.

Working in partnership raises some particular issues for deliverability and accountability. Cumbria Vision sat in between the Regional Development

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[27] The blueprint and the local planning policy share an underlying evidence base, and were produced simultaneously.

Agency, and owned the capital delivery body for West Cumbria. However, none of these bodies were directly accountable. In both the foreword to the 1997 White Paper on the establishment of the Regional Development Agencies, and later in the 2002 White Paper on the actual subject, the Government was committed to move to directly elected regional government alongside the devolution in Scotland and Wales (DETR 1997; DTLR 2002). However, with this not ever coming to pass, the RDAs were accountable through multiple mechanisms to various bodies, such as councils, ministers and others. For their delivery partner, Cumbria Vision, this challenge was equally problematic, given the two-tier local government arrangements in the county. This was evident in their 2009-2019 strategy, which recognised the need to "develop appropriate structures for holistic accountability and democracy" (Cumbria Vision 2009: 32). The board of Cumbria Vision was made up of 15 members (Cumbria County Council 2005: 3), with a private sector majority but an effective county council veto as the 'accountable body' for its funding:

- Chaired a NWDA Board member based in Cumbria;

- two representatives from the County Council;

- three representatives from the District Councils (the Leader of Allerdale, Barrow and Carlisle);

- the Chairs of Rural Regeneration Cumbria and West Lakes Renaissance;

- a private sector representative of the Cumbria Strategic Partnership;

- other private sector representatives (sufficient to ensure a private sector majority – a recruitment process for these places is currently underway).

There is a similar, but starker pattern on the board of the Britain's Energy Coast organisation (and the West Cumbria Development fund which proceeded it):

- Chairman, a former government minister who is independent of West Cumbria, but not politically independent of the local authorities (both Labour controlled);

- Three nuclear industry representatives, one each from the NDA, NMP and Sellafield Limited, the three organisations funding the initiative;

- Three private sector business representatives from businesses operating in West Cumbria; and,

- Three elected representative from local government, one from each of the two Borough Councils and one from the County Council (all Labour).

It has been claimed that new forms of governance are characterised by an authoritarianism and democratic deficit, and this is part of wider changes in governance over the last thirty years (Swyngedouw 1996; 2004). What we see in the economic plans for West Cumbria, and in the bodies which undertake intervention, is a minimal to none-existent role for local legislatures. Sassen (2008: 145) argues that "while each state is different, the internal redistribution of power away from the legislature and toward the executive is becoming evident in a growing number of states worldwide", and this extends to local government as well as is seen here. Executives of local authorities have their part, but still sharing power with private sector and other interest. The makeup of the boards of the various organisations reveals that while there is a democratic element to the overview and management of both the government mandated, top-down Cumbria Vision and the locally initiated, bottom-up Britain's Energy Coast organisations through the inclusion of representatives of the three local authorities, this is in the minority and the makeup of the Board reflects the public/private partnership and in particular the funding of the

organisations. Establishing one's own organisation locally does not seem to have a beneficial effect on democratic accountability. This is reflective of the current era of "elite localism" and "local elitism" (Peck and Tickell 1995, in Cochrane et al 2002: 113).   In this context, businesses are granted "power without responsibility" and the local state "responsibility without power" (Peck and Tickell 2002: 386). As a result, "place entrepreneurs" are able to utilise their significant economic and political status to "exercise considerable influence on policy formulation, planning documents, and regulatory procedures" and other elements of local governance (Swyngedouw and Baeten 2001: 384). This clearly has "far-reaching consequences for local political conditions and regulatory settlements" (Peck and Tickell 2002: 385).

In addition, all these various governance structures are aimed at the same thing, local economic development, and are responding to the same changes. It is also important to focus not only on the structure, but its aims. Whether we characterise local governance as 'post-Fordist' depends on what it aims to achieve more than the nature of the new structures and processes themselves (Goodwin 1996: 1403). Local governance has an important role to play in the mode of regulation of society, particularly in this case through, among other things, infrastructure provision and the planning of local economic development (Goodwin 1996: 1402). The evolution from state to local economic intervention in West Cumbria, although in some ways unique in that they reflect very locally specific aims and objectives, are in response to a post-Fordist imperative to be a globally competitive sub-national region.

7.5 – Discussion: Whose region?

Regions may emerge, broadly speaking, for two reasons (MacLeod and Jones 2007: 1181). Firstly, through politico-administrative action, which seeks to restructure existing political and administrative landscape to address challenges such as the difficulty of state intervention in economic activity at the national scale, or pressure from regional movements. Examples include the rise of devolved administrations and of imposition of Regional Development Agencies by central government. Secondly, as a result of economic developments, where regional convergence of firms into clusters is driven by the benefits of doing so such as sharing the costs of infrastructure and 'untraded interdependences' which can't be traded but are essential to business and are rooted in relational networks between firms (Amin 1999: 369). Examples include the emergence of regions such as Silicone Valley in the USA.

While interest in regions as sites for economic intervention can be a further development of advantage seeking capitalism (i.e aiding clustering) it could also be interpreted as the failure of the state to evenly manage economic development and a way of normalising unequal growth (Brenner 2003: 306). The contribution regionalism brings is in seeing the regional scale not as a given, but as an emergent category; something which has to be made and is as such an "inherently political act" which forces us to consider "whose region is actually being constructed" (Neumann 2003: 116). In the context of a political environment in which the state is not the only actor, there may be competing regionalisms emerging from a complex milieu of competing actors (Söderbaum 2003: 8). In regions which are "institutionally thin" in particular, governance has been dominated by "elite coalitions" which rather than seeking to unlock new routes to development, builds on reinforcing existing dominant interests and

eschew "new institutional practices" which might widen participation in local decision making and regional development (Amin 1999: 373). Thus as a discourse and practice regionalism may be "instrumentally attractive to powerful interests" (Lovering 1999: 392).

So, 'whose region is actually being constructed' in West Cumbria, what interests have they served and why has it emerged as a site for repeated, bottom-up, specific economic interventions over the last 25 years?

Throughout all the iterations of local economic development in West Cumbria over the past twenty-five years, one things has remained constant. Despite the words, which might suggest that the "old images of municipal welfarist (bureaucratic) politics" being replaced by "dynamic and charismatic (entrepreneurial) business leadership" (Cochrane et al 1996: 1319), in the end what Cochrane et al (1996: 1319) call "British style" becomes apparent, where the actual plan only superficially resembles a local 'growth coalition' of the US style and in fact is more accurately a 'grant coalition' seeking to attract and spend public money. From the West Cumbria Development Fund, which was money from a nationalised company (BNFL), through to the more recent attempts to attract nuclear power stations[28], through the more central RDAs, all have been primarily about attracting or realigning existing, public money. In many other ways the interventions seen in West Cumbria, as explored in this chapter, are also not unique, such as their apparent democratic deficit and the constrained freedoms imposed by, and negotiated with, government. The unique element of these interventions is their explicit and implicit aims; the pursuit of a future based on the nuclear industry.

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[28] New nuclear stations finances are backed by the UK treasury with a 'strike price' which guarantees a minimum price for the energy generated for several decades (World Nuclear News 08 October 2014 - http://www.world-nuclear-news.org/NP-Hinkley-Point-C-contract-terms-08101401.html)

The lack of democratic accountability and wider community agreement to the blueprint is to be expected of contemporary economic development initiatives. Two neo-Gramscian concepts, 'accumulation strategy' and 'hegemonic project' (Jessop 1997: 61-62), help characterise the local politics of economic development. The overarching accumulation strategy in contemporary society is trans-national liberalism (Paul 2005: 2106), in which capital seeks the greatest return on investment from locations across the globe, aided by and requiring changes in the role of the state. Elements of that framework are demonstrated in West Cumbria through the partial de- and post-nationalisation of the Sellafield nuclear site in 2008 and other changes made by governments over the past thirty years to industry and welfare, and within that framework local strategies are important in an age of intra-local competition. Attempting to deliver local economic growth, as will be seen in the West Cumbrian context, can often rely on the second of the neo-Gramscian concepts, the 'hegemonic project', which:

> ". . . mobilizes support behind a concrete program of action that asserts a contingent general interest in the pursuit of objectives that explicitly or implicitly advance the long-term interests of the hegemonic class (fraction) and thereby privileges particular economic-corporate interests compatible with this program while derogating the pursuit of other interests that are inconsistent with the project" (Jessop 1997: 62).

Paul (2004: 2016) argues that social support for the hegemonic project, which is inherently unequal, requires the stressing of shared cultural and ideological beliefs. In this respect, the concrete plan is the 'Britain's Energy Coast' blueprint, which explicitly advances the interest of the nuclear industry, emphasises a particular locally shared belief (or attitude) which is public support

for the nuclear industry. Whether or not this derogates the pursuit of other interests is debatable as there may be no other realistic interests to pursue in such a remote area (Wynne et al 2007). Although the blueprint does seek to encourage other related energy and advanced manufacturing developments in addition to, but undoubtedly dwarfed by, the nuclear ambitions. The extent of the inherent inequality of hegemonic projects may be contestable, as while some may be excluded from direct benefits (such as direct employment in, say, financial services in London), in cases where there is no other viable choice to sustain the economy of a certain place it may be the least unpalatable option. To those that have shall be given.

In interpreting this project, Gough's (2004: 194-197) differentiation between neo-liberal and social democratic ideologies of local economic governance and regulation are relevant. The former stresses fragmentation of national systems to enable and encourage greater autonomy and differentiation between places so intra-local competition will seek to attract capital by, or resulting in lowering the cost of labour. The latter on the other hand seeks to embed production in places and seek the cooperation of labour and residents and create unique niche local economies. As the state's interference in the economy has declined, and a "shift from government to governance" involving the "engagement of quasi- and non-state actors in a range of public–private partnerships" (MacLeod and Goodwin 1999: 506) has occurred, in practice the two strategies are not mutually exclusive, rather they can be melded to form "a 'progressive competitiveness' strategy" where labour, the state and businesses seek competitive success together (Panitch 1994: 82). This attempts to "give the best of both political words" in which "public-private partnerships … can fuse collective organisation of a social democratic flavour with … a sharpening of

inter-local competition" (Gough 2004: 197). In practice, there is a scalar differentiation between the strategies, with the neo-liberal ideology being most evident at national and supra-national levels where regulation was and is liberalised, and the social democratic ideology being seen at the more local level, where business happens and has to co-exist with and have the support of at least a majority of the residents.

In the case of West Cumbria, the features of the area which were covered in detail in this and earlier chapters – the isolation, overwhelmingly positive public opinion towards the nuclear industry, and an inability to move existing nuclear operations – make adopting features of an embedded, social democratic strategy necessary, while the networked realities of the contemporary economy and specifically nuclear industry after de-nationalisation impose elements of international neo-liberalism. In seeking to meld the two, and have the state, capital, labour and local residents involved to construct the "political consensus between sections of capital, labour and residents" (Gough 2004: 196) the Energy Coast, and now the Centre for Nuclear Excellence as concepts attempt to do that, to varying extents as was explored, involve public and private industry, local authorities and wider consultation. The problem however is that the pursuit of already dominant economic and political interests leads to "the systematic exclusion or further disempowerment of politically and/or economically already weaker social groups" (Swyngedouw 1996: 1499).

7.6 – Conclusions

Broadly speaking, those 'top down' institutions of intervention, such as the Regional Development Agency and even its delivery bodies in West Cumbria have much broader geographical coverage, and therefore consequently broader

aims, than initiatives originating in the region. The relationship between geographical scale and intervention focus is quite clear. The two incarnations of the Britain's Energy Coast initiative, and lately the Centre for Nuclear excellence, have followed a trend to smaller geographical focus and more explicitly nuclear-aim development.

There may be no other economic options for West Cumbria that are viable, certainly in the short term, than to pursue more nuclear development. Nor should this chapter be seen as casting a judgement on whether or not more nuclear developments should or should not be pursued in the region. However, what this chapter has aimed to set out, building upon the chapters which preceded it, is that despite attempts at diversification, nuclear is the only option being pursued with any success. It is being driven by actors with institutional interests in a nuclear future; such as those representing councils with business rates to consider or those involved in nuclear technologies with commercial concerns to protect and advance. This further pursuit of an industry which is already dominant has clear consequences. Just as the rescaling of the structures of economic intervention demonstrate a path dependency in their scaling, so too will the pursuit an economic order broadly based around more nuclear lead to the reproduction of existing patterns of inequality.

It may, or may not, be the case that nuclear developments could preclude or deter a more diverse economic base in West Cumbria. Evidence in this and previous chapters is contradictory. From local authority experience suggesting an issue of blight, to survey data from industry highlighting the most significant deterrent is the lack of connective infrastructure. It is the case that nuclear developments, particularly large-scale developments such as reactors and underground waste repositories, will require investment in local infrastructure

and both may carry with them additional benefits for the local communities. However, as was seen in the past with the development of the THORP facility, which was described as being "beaten only by the construction of the Channel Tunnel to the title of 'biggest construction site in Europe'" (Sellafield 2016: 30), such infrastructure may arrive after a facility is finished and be small in scale compared to the geographical challenge. In the long term, the currently planned economic developments in West Cumbria could provide a foundation upon which to build a more diverse economy, or they could not. The lessons of past developments, such as THORP, would suggest that the pursuit of nuclear will not solve the inherent issues of doing business in a very remote region. Instead, it is more likely to continue to perpetuate the economic conditions which has produced a biased labour market, significant income polarisation and persistent inequalities in the local community. Why a future of this kind is accepted, despite a recognition of the nuclear industry's role in many of these social problems, is the question to which the conclusion of this thesis turns next.

CHAPTER 8 – CONCLUSIONS

8.1 – Introduction

This thesis has sought to analyse *'the relationship between a global industrial actor (Sellafield) and its regional host (West Cumbria) – and what insights does that relationship offer for understandings of neoliberalism/globalisation?'* In this chapter the main findings of the thesis are summarised, specifically how the data analysis resolved the three supporting research questions. In the latter part of this chapter, the trajectory of this research is outlined, as the directions for future research, informed by an appreciation of the limitations of this study, are considered to extend the main findings. Finally, some implications of this thesis for theory and policy are explored.

8.2 – Resolving the research questions

This section will discuss how this thesis has resolved the three research questions in order to achieve the overall aim. The three supporting research questions are:

RQ1 - Political: How have local, regional and national governance arrangements been modulated through the presence and actions of the nuclear industry in West Cumbria?

RQ2 - Social: How is the nuclear industry viewed in West Cumbria, and how has this changed in line with wider shifts in terms of state-industry relations?

RQ3 - Economic: What are the implications for regional competitiveness arising from the changing relationship between the state and market for the nuclear industry in West Cumbria?

In this section each of those research questions will, broadly, be addressed separately. This will detail how the thesis has resolved those research questions in support of addressing the main aim, which will be explored at the end of this section.

8.2.1 – Research question one

The first research question relates to political effects, particularly the effect on governance structures, of the relationship between Sellafield and West Cumbria. This was addressed in both chapters five and seven, which predominantly explored the governance of the nuclear industry and of economic development respectively. This section will predominantly focus on the national level of governance of the nuclear industry, and deal with economic development structures in the discussion around economic competitiveness later with the discussion around research question three.

The nuclear industry in West Cumbria includes the most expensive and hazardous decommissioning challenges in the UK. As explored in chapter three, the range of activities undertaken at the site in its 60 year history embrace power generation, reprocessing and fuel manufacture. The significant challenge comes from the reprocessing activities, which separate from spent fuel the most hazardous isotopes as a waste stream, and the lack of thought given in the early development of the site to its eventual decommissioning. As explored in chapters three and five, this created a significant financial, technical and environmental challenge which, under the long-term management of the

site by BNFL as a nationalised company, did not see sufficient progress to satisfy government. BNFL's track record on the successful delivery of major projects to either design specification, time or budget was dire, such as the massively over-budget and underperforming THORP and MOX plants at Sellafield. However, the challenges being faced at Sellafield were not entirely novel. The United States had developed atomic weapons programmes earlier than the UK, and consequently had to decommission those earlier too. The poor performance of BNFL at Sellafield led to the desire for, and veneration of, global expertise. This led to the market for decommissioning services the NDA was set-up to achieve to address the costly and challenging nuclear legacy.

Chapter five analysed changes to governmental policy towards the nuclear industry, specifically decommissioning and waste management, since the 1990s. The governance of the nuclear legacy underwent significant changes in that time. A multilevel governance perspective was employed to analyse the changes to the way the state achieves its aims for management of the nuclear legacy. This revealed that despite policy changes leading to a wider array of actors involved in the delivery of policy, the state remains in a strong position based on its position as the actor of last resort. The rescaling of power, apparently upward to the global and then back to the national in the decommissioning policy area for Sellafield, was driven by a desire to reduce cost; from the days of the 'cost-plus' commercial contract brining money into the treasury, to the cost-reducing contract to reduce the amount being spent. For waste management, despite devolving the responsibility for initiating the site selection process to much more local levels, the process was unsuccessful due to the multi-level governance environment in UK local government and the tension between tiers of local and central government. In both cases the

policies rescaled power, but its application did not take account of the full range of 'policy tools' by which this power can be exercised in practice.

At the local level, as chapter seven explored, local structures of economic development in West Cumbria were established or attempted to be co-opted by the nuclear industry to promote existing dominant interests and their reinforcement. This 'elite' regionalism, rather than being contested through struggles involving scale being politicised or jumped saw the nuclear industry attempting to circumvent more regional structures of economic development by appealing directly to central government in order to secure greater freedom to pursue a nuclear future for West Cumbria. This was unsuccessful, and the state retained barriers and capabilities in the field of nuclear and imposed its own system of Local Enterprise Partnerships for economic development in sub-national regions.

8.2.2 – Research question two

This section discusses how this thesis addressed the second research question, which asked *'how is the nuclear industry is viewed in West Cumbria, and how has this changed in line with wider shifts in terms of state-industry relations?'* This was almost entirely contained within chapter six, but there were linkages to the changes in the relationship analysed in chapters five and chapter seven.

In chapter six the changes made by incoming management of the Sellafield site were analysed alongside survey data which demonstrated the complexity of local public opinion towards the nuclear industry. Changes were taking place as a result of the change in governance of the site in an area which, despite strong support for the nuclear industry, had a substantially less positive opinion

of the role and impact of the nuclear industry in the local area. The greatest

levels of support were in Copeland, where the Sellafield site and the greatest

proportion of the workforce reside, however it was only in this area where a

majority of people believed the area deserved more for its service in hosting

nuclear sites. Greatest support in this area was matched by greatest

dissatisfaction.   Or, perhaps greatest exposure leads to greatest

understanding? The chapter then turned to an exploration of the lack of

understanding of what responsibility Sellafield has to the wider community,

either in terms of the corporate responsibility of any large employer or in terms

of the premium for living with nuclear risk.

The role of 'glocal elites' in shaping local conditions in a networked global

economy was highlighted in this specific case. The substantial economic power

wielded by Sellafield executives in the West Cumbrian economy meant that

changes which elsewhere might be less extensive have impacts beyond the site

boundary. This economic power was transferred to private sector interests by

government transferring its capabilities, and thus a link between legitimate

authority and economic power was identified. The introduction of imperatives to

deliver shareholder value, and then subsequently public value for the taxpayer,

which were manifested in cost savings having to be made by management led

to economic power being directed against already weaker and disadvantaged

groups locally such as those without access to the Sellafield job market and

existing industrial workers. The obligation and identity of overseas

management was questioned by focus group participants, but their actions were

simply incentivised by the contract they were operating under. The move back

to a nationalised ownership and British management team was accompanied by

greater attacks on employee terms and conditions than ever happened under

the ownership of Nuclear Management Partners. This reveals that the imperative to save money came from the UK central government, enacted by its agency, the NDA.

A key issue in the way Sellafield was viewed in West Cumbria related to the status of the workforce. The creation of a type-II multi-level governance environment for the decommissioning of nuclear sites allows significant authority to be transferred to a wide range of actors at varying distances from government and at a range of scales. At the Sellafield site in particular this meant more than just transferring the responsibility to enact a contract to achieve certain decommissioning and operational targets, it also meant altering the status of over 12,000 employees and over 25% of the working age population in a borough. The aims and objectives of the application of that power were changed, and despite being run by a consortium of global companies, the site and its workforce became more locally focussed. The transfer of the authority to manage the Sellafield site cannot be considered without recognising that it is also, in practice, the transfer of significant economic power. The consequences of this transfer however have more to do with the way in which they are transferred and why than to whom they are transferred. While overseas management became a target for aspersions over their loyalties and obligations, the significant economic power which they possessed and was directed against those already disadvantaged by the locally skewed labour market, was wielded according to the priorities of government set by contract which would have been enacted by management regardless of where they are from. The subsequent return to nationalised ownership and management demonstrates that this is the case. As discussed, the austerity programme to cut public expenditure, from which Sellafield had been largely

immune from when the workers were technically private sector employees, targeted pay and conditions of workers in a way which made the efficiency savings of the parent body organisation (NMP) seem minor. However, the issue the significant financial resources of the Sellafield contract being used to award contracts to the companies of the parent body (PAC 2016) included a British company does reflect the issue of corporate loyalties of economic elites and supported the perception that private ownership was placing corporate interests before those of the workforce or region. The restructuring of the state to bring in such a wider array of actors was on balance, therefore, a negative influence on the way the industry was perceived in West Cumbria.

8.2.3 – Research question three

This research question asked *'What are the implications for regional competitiveness arising from the changing relationship between the state and market for the nuclear industry in west Cumbria?'* This was predominantly addressed in chapter seven which, informed by the complex public opinion explored in the previous chapter, analysed attempts to craft a nuclear future for West Cumbria. This takes forward the issue of domination and elite interests but in the context of regional economic development. The contribution regionalism brings is in seeing the regional scale not as a given, but as an emergent category; something which must be made and is as such an "inherently political act" which forces us to consider "*whose* region is actually being constructed" (Söderbaum 2003: 7). Over the course of over 25 years, numerous attempts have been made in economic development in West Cumbria, backed mostly with state money either through established economic development funding routes such as the Regional Development Agencies or through money from the nuclear industry. In all cases, economic development

either involved as part or focussed on near exclusively new nuclear developments.   This is not unexpected, given that in regions which are "institutionally thin" in particular, governance can become dominated by "elite coalitions" which rather than seeking to unlock new routes to development, build on reinforcing existing dominant interests and eschew "new institutional practices" which might widen participation in local decision making and regional development (Amin 1999: 373). Thus, as a discourse and practice, regionalism may be "instrumentally attractive to powerful interests" (Lovering 1999: 392).

Regions may emerge, broadly speaking, for two reasons, either through "politico-administrative action" such as Regional Development Agencies, or through "economic developments" such as Silicon valley, where untraded interdependencies matter. With regard to the second imperative, Dicken (2007: 21-23) highlights the propensity for firms to form these 'localised geographical clusters' which are 'generalised' or 'specialised' i.e. cities as an example of generalised clusters where the peripheral activities common to many firms and their employees can be located, and science parks (a classic UK example from the past 20 years) where closely related industries locate as an example of a specialised cluster. These clusters, or local "territorial production systems" (Swyngedouw and Baeten 2001: 833-834), can emerge from both economic and political action. The two imperatives for regions emerging are not mutually exclusive. The West Cumbrian example, begun with the spinning-out of elements of BNFL to establish a science park now occupied by over 100 companies in the nuclear supply chain, is evidence of this. Political action can provide the catalyst for economic development. However, in an age where the "discretionary powers of the state" to shape economies has declined and the importance of local conditions has increased (Swyngedouw 1989: 31) regions

have become "partly denationalized strategic territorialisations with considerable regulatory autonomy through the ascendance of private governance regimes" (Sassen 2008: 54-55). This raises questions of accountability of economic interventions, such as Britain's Energy Coast and others, where there is a lack of direct democratic accountability common to rescaled governance regimes (Swyngedouw 2004: 41; Bulkeley 2005: 878). This is particularly salient for the examples in West Cumbria explored in this thesis which rely on public rather than private money, a situation not uncommon in the UK (Cochrane et al 1996: 1331; Swyngedouw 1996: 1503).

Economic development plans in West Cumbria attempt to create an 'Energy Coast' or a 'Centre for Nuclear Excellence' by stressing "shared cultural and ideological beliefs" (Paul 2005: 2016) such as the positive public opinion towards the nuclear industry. The assertion that these plans are in the interests of the whole area, while in fact advancing "explicitly or implicitly … the long-term interests of the hegemonic class" (Jessop 1997: 62) leads to "the systematic exclusion or further disempowerment of politically and/or economically already weaker social groups" (Swyngedouw 1996: 1499) as already discussed. This situation arises when "Dissensual contestation and struggles are replaced by techno-managerial planning, expert management and administration" and "politics as policymaking has sutured the space of the political as expressions of disagreement/dissensus" (Swyngedouw 2010: 225). The focus on measures such as GVA, job numbers, inward investment and so on do two things. Firstly, it does not distinguish between those investments which address internal inequalities and those which reinforce them. Secondly, the use of such language makes expertise "the foundation for … politics/policies" (Swyngedouw 2007: 27). This diminishes the opportunities for opposition when the terms of

the debate are skewed towards those who can afford to spend hundreds of thousands of pounds on consultants and have the resources of public and private bodies locally to draw upon. This diminishes the opportunity for a meaningful opposition "creating a "'democratic deficit', through the side-lining of critical voices" (Johnstone 2014: 703). Even for individual developments, such as new power stations and waste facilities, despite the pretence to public involvement with ever more consultations, the side effect can be a state of "UNCLE—Unlimited Consultation Leading to Exhaustion" (Johnstone 2014: 705). This renders nuclear developments in West Cumbria 'post-political' or the nuclear industry 'hegemonic' locally and exacerbates the lack of proper democratic accountability of the actions of complex governance arrangements embracing a wide array of actors attempting to control space. When plans are presented, finished, to local councillors after being developed by a small group of council leaders and nuclear industry representatives at meetings which are not public, it is fair to say there are substantial 'barriers' ensuring 'non-entry' into arenas of decision (McCalla-Chen 2000: 34). However, such barriers exist at multiple levels. The constraints placed on local ambitions by government policy, and unsuccessful attempts to overcome those by bypassing regional enterprise structures, demonstrate that it is not only at a local level that barriers are encountered and actors attempt to maintain their control over space or policy.

Political action, particularly when lacking democratic accountability, reminds us of the question of interests. If regionalism is about correcting uneven regional development in a national economy (Brenner 2003: 306; MacLeod and Jones 2007: 1180), and the experience of West Cumbria demonstrates an earnest desire to close that disparity, less attention is paid to dealing with the uneven

development within the region itself. Despite this and that in a political environment in which the state is not the only actor, where there may be competing regionalisms emerging from a complex milieu of competing actors (Söderbaum 2003: 8), we see no alternative strategy for West Cumbria. That is not to say specific developments in certain instances are not opposed, sometimes successfully, but in general despite as explored in the previous chapter, a recognition that the area does not necessarily do well from the nuclear industry, all economic development in West Cumbria centres itself on more nuclear.

8.3 - Implications for the geographies of power

What can we learn, from this study, about the geographies of power? In short, we can see the difference that geography makes to the exercise of power (Allen 2003: 1). Power, rather than being a placeless property, is experienced in the places people live and work. As explored in chapter two, the state has been altered, in the shift from government to governance. However, as this thesis has revealed, it is not a simple case of a decline in state authority, but is more complex. Indeed, the attribution of any particular property to any particular scale is folly. The transformation of the state, which has involved capabilities being rescaled, cannot be understood by simply following the capabilities. Making a state function more proximate to a region does not mean it becomes more proximate in their lives, nor more accountable to them, perhaps quite the reverse. It has been the case that generally it is capital that has jumped up to the global scale and regulation of labour down to the local (Swyngedouw 1997: 170). However, it is not enough to be confined to terms such as 'up' and 'down'

and ignore how these changes are enacted and practiced. The notion that globalisation of the ownership and management of firms is inherently disempowering is too broad. The dynamics of what these rescalings of state authority actually mean in practice are complex and geographical.

Local conditions shape what is possible in the exercise of power, such that in this instance the local public opinion towards the nuclear industry is a vital enabler for the actions of the industry and the potential for its reinforcement of dominance through a nuclear future for West Cumbria. However, the centre has retained a key position; the demise of state authority is wildly exaggerated. The move to a contractorised, target-driven model of service delivery in the public sector is "a form of authority 'detached' from the centre, yet 're-embedded' in subnational institutions as a means to secure outcomes" (Allen 2011: 292). This denationalisation of state functions (Sassen 2008), in the case of the nuclear industry through the establishment of the NDA and creation of a competitive market for decommissioning services, draw distant actors and the interests close such that "the centre" and the 'global' are both in the region, creating novel geographies (Sassen 2008) where the idea of a centre being above the region no longer holds (Allen 2003; Allen 2011). Instead, power is brokered directly in the region and these non-state actors can "fold in their political demands" to alter and change the inducements and conditions of a contractorised state (Allen 2011: 292). The experience at Sellafield of a private owner exercising public functions, is one of constant contract variations driven by a desire for increased payments to satisfy distant shareholder value.

The failure of that contract model for the decommissioning of nuclear sites and the subsequent renationalisation of the Sellafield site revealed two issues for the geographies of power. Firstly, the state never went away, it was not

disempowered but the way its aims were achieved changed and involved

opening up the practice of state capabilities to a broader array of actors.

Secondly, the disempowerment of workers was driven by interests which were

intent on maximising shareholder returns. The location of those interests was

irrelevant, they were made proximate by the contract. The return to state

ownership and management however made no difference to the issues the

workers had faced, rather things were made worse, as efficiencies were no

longer confined to or limited by the scope of a contract, but opened completely

up to meet the state's requirements for national collective bargaining in a time of

austerity to limit pay and benefits across the public sector.
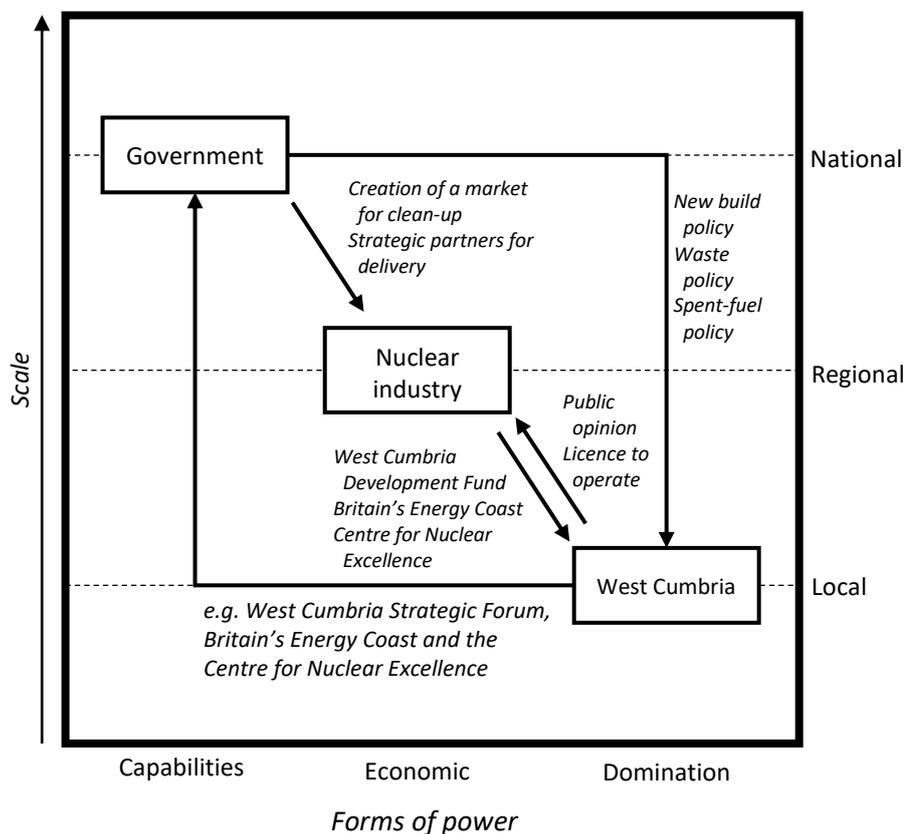
Figure 8.1 – The relationship between the government, nuclear industry and West Cumbria

The interplay between state, industry and region through which these

geographies of power are created and contested is detailed in practice in figure

8.1. What this highlights is that it is the interests and practice that matter, not the movement up or down of authority. Therefore, we have to examine how power is in how it is used in specific places, not ascribe properties or intentions to any particular scale as a given characteristic. Simply as a scale, global does not necessarily mean greater disempowerment for the region than national, and nor does freedom necessarily come without constraints. The centre constrains by "reaching into the politics of regions and localities" (Allen 2011: 291) which will accept, contest or negotiate successfully or not, as the crafting of a nuclear future for West Cumbria clearly revealed.

8.4 – Future research

8.4.1 - What could or should it look at?

The way in which domination occurs, and the reasons rebellion does not form, require further research in the UK. In this community, while there are no alternative strategies for the future economic and social development of the area, there have been cases of opposition to nuclear developments in the 1990s and 2000s. There is also a clear recognition that a single dominant industry is problematic in general, and Sellafield has specific issues with its own responsibility to the community. Despite the intentions of earlier economic development plans to at least have nuclear as part of a wider more diverse ambition, subsequent more recent plans have become more and more nuclear focussed. More research is needed to understand why actors fail to pursue issues of interest or concern and instead accept or adjust to the existing situation.

This could be addressed with more study in West Cumbria, but it would address a significant limitation of this research if a comparative element were sought.

The greatest limitation of this research stems from the single case study. Future research could explore other nuclear sites, other areas dominated by single industries in the UK, and the wider political context of an increasingly traditional left and right wing polarised political landscape at a national level is opening up the whole terrain of state/market relations to practical pressure and concrete change, as explored in the next sub-section.

8.4.2 – Policy developments
Upcoming policy developments in the nuclear industry were explored or mentioned in chapters three and five earlier in the thesis. There are four nuclear policy developments and wider issues in the relationship between state and market which are emerging that could provide opportunities to explore the issues raised in this thesis.

The first is the failure of the contract to decommission the MAGNOX reactors and subsequent internal inquiry into how that contract was awarded. The NDA and Department of Business, Energy and Industrial Strategy are exploring why they tendered and awarded a contract which the winning consortium then found did not specify the work which was actually required at those nuclear sites. The decision as to whether to re-tender the contract, or as for Sellafield explore other models (such as direct ownership) is yet to be taken. In either eventuality, this provides an opportunity to explore the way in which complex contracts which rely heavily on payment as incentive work, and the range of interests and power which are brought to bear upon communities at nuclear sites. Secondly, the programme of new reactors, all of which are at existing sites, will be an opportunity to examine how the nuclear futures of these areas do or do not reinforce patterns of inequality and disempowerment among the workforce and

wider community. The reactors planned for West Cumbria will be provided by the Korean Nuclear Power Corporation (Kepco), and other sites are provided by different private partners. Thirdly, waste management will be a huge project in time, cost and activity should a community go from initially expressing interest in taking part in the search for a suitable location for a deep geological facility for the storage and disposal of higher activity radioactive wastes. This process will embrace a range of issues in this thesis, such as rescaled power relations in the siting process, contestation of the nuclear future in the opposition to any facility right through to construction and operation for the next century or more. Fourth and finally, the appointment of strategic and programme partners to address capability deficiencies site wide and for specific projects respectively at Sellafield and potentially other sites, pending the outcome of the MAGNOX contract inquiry, will provide opportunities to further explore the role of the private sector in public service.

Outside the nuclear industry the issue of the relationship between the state and industry is under a level of scrutiny which is unprecedented since the shift to a neoliberal, contractorised model of public service delivery started to be really pushed in the 1980s. On 15 January 2018 the construction services firm Carillion entered liquidation. Carillion was involved in providing public services across the UK, from construction of hospitals and railways, to the provision of school meals and maintenance of military housing.   The collapse straight into liquidation, without any period of administration, signalled that the business was able to be salvaged. The company had debt of £1.5 billion, some of which arose from over-promising and under-pricing public sector contracts, which then required the company to borrow money to complete the projects (Brummer 2018).   This has prompted economic and political commentators to question

the very viability of neoliberal restructuring of the state, which has been explored in this thesis by looking at the nuclear industry. Robert Peston (2018), the former BBC Economics Editor and current ITV Political Editor said of Carillion's collapse:

> *"Carillion's collapse marks the end of a 25-year love affair between Tory and New Labour governments on the one hand and private-sector service providers on the other. To use a Star Wars analogy, the public sector strikes back."*

However, the findings of this thesis are very relevant to the Carillion crisis. The suggestion that these crises imply that a totally nationalised public sector is preferable to outsourcing and contractorisation of public service are premature or naïve. Historical examples, such as the performance of BNFL, or the changes to terms and conditions of nuclear staff following renationalisation caution against assuming any particular model is best. This thesis demonstrated that for the move from privatised to being re-nationalised brings simply a different set of interests to bear, from having made distant shareholder interests proximate in the context of a contract (perhaps amended or varied) to granting a much greater scope to government at a time of austerity may well be a case of 'from the frying pan to the fire'. However, the common theme from this research to the emerging shift back to an in house public service provision is the failure of public sector contracts. The return of these staff and others to the public sector, and what effect the replacement of shareholder and other interests with the austerity-driven interests of central (and local) government among other changes has.

APPENDIX A - REFERENCES

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APPENDIX B – SURVEY TECHNICAL DETAILS

Sampling – size, stratification and randomisation

The formula to estimate the required sample size is below (Dillman 2007):

$$N_s = \frac{(N_p)(p)(1-p)}{(N_p - 1)\left(B/C\right)^2 + (p)(1-p)}$$

where:

N_s = completed sample size needed (notation often used is n)

N_p = size of population (notation often used is N)

p = proportion expected to answer a certain way (50% or 0.5 is most conservative)

B = acceptable level of sampling error (0.05 = ±5%; 0.03 = ±3%)

C = Z statistic associate with confidence interval (1.645 = 90% confidence level; 1.960 = 95% confidence level; 2.576 = 99% confidence level)

For the purpose of surveying west Cumbria, in line with the ethical approval and the electoral register listing only those of 18 years age and above, the sample size can be estimated. The 2011 census indicates there are 130,804 persons of the appropriate age. The number on the edited version of the electoral register for the two boroughs is significantly lower, at 85,424 for 2013, as not everyone registers to vote and some opt out of appearing on the edited version of the register. Using the census figure is more appropriate, given that the study aims to explore the whole adult population of West Cumbria, not only those who register to vote. Based on this figure, the box below shows the calculation of sample size for this project.

$$N_s = \frac{(130,804)(0.5)(0.5)}{(130,804 - 1)\left(0.05/1.96\right)^2 + (0.5)(0.5)} \qquad N_s = 383$$

An optimistic estimate of the response rate would be 15%, but it was thought that nearer 10% was more realistic at the time of sampling. On the basis of a 10% response rate the mailing would need to be to 3830 people. For practical reasons with printing and ordering quantities the mailing was to 4000 people, with an initial trial to 100 of those 4000 to test the survey and response rate. Too many responses would not be a problem, unlike too few. The 100 revealed some minor issues with question wording (covered later) and yielded a response rate of 22%.

After deciding on the sample size, the sample was stratified on a geographical basis. This is because location, particularly any potential differences urban/rural and distance from the Sellafield site, are of theoretical interest and it is therefore necessary to stratify the sample geographically to ensure that the response is as representative as possible. Small rural sub-populations could be missed as a result if there were no stratification. The stratification by electoral ward ensures a complete and even geographical coverage of all West Cumbria, and that the main urban areas of Whitehaven and Workington are not overrepresented. The electoral register, which is being used as the sampling frame, records the polling district of individual; this is then easily grouped by electoral ward. Table 5.3 shows the stratification for all electoral wards in west Cumbria. This is only based on the population aged over 18 in the 2011 census. The figures in red show the number of cases from each ward for a total sample of 4,000.

West Cumbria Stratified by Electoral Ward							
Allerdale				**Copeland**			
Ward	Population (18+)	Proportion (%)	Sample	Ward	Population (18+)	Proportion (%)	Sample
All Saints	3,739	2.86	114	Arlecdon	1,212	0.93	37
Aspatria	2,635	2.01	81	Beckermet	2,412	1.84	74
Boltons	1,524	1.17	47	Bootle	1,071	0.82	33
Broughton St Bridget's	3,208	2.45	98	Bransty	3,866	2.96	118
Christchurch	2,753	2.10	84	Cleator Moor North	3,186	2.44	97
Clifton	1,270	0.97	39	Cleator Moor South	2,162	1.65	66
Crummock	1,302	1.00	40	Distington	3,173	2.43	97
Dalton	1,439	1.10	44	Egremont North	3,355	2.56	103
Derwent Valley	1,328	1.02	41	Egremont South	2,989	2.29	91
Ellen	2,517	1.92	77	Ennerdale	821	0.63	25
Ellenborough	2,962	2.26	91	Frizington	1,981	1.51	61
Ewanrigg	2,525	1.93	77	Gosforth	1,195	0.91	37
Flimby	1,307	1.00	40	Harbour	3,436	2.63	105
Harrington	2,574	1.97	79	Haverigg	1,599	1.22	49
Holme	1,326	1.01	41	Hensingham	3,172	2.43	97
Keswick	4,278	3.27	131	Hillcrest	2,061	1.58	63
Marsh	1,259	0.96	39	Holborn Hill	1,876	1.43	57
Moorclose	3,714	2.84	114	Kells	1,921	1.47	59
Moss Bay	3,681	2.81	113	Millom Without	1,143	0.87	35
Netherhall	2,454	1.88	75	Mirehouse	3,362	2.57	103
Seaton	4,018	3.07	123	Moresby	1,104	0.84	34
Silloth	2,663	2.04	81	Newtown	2,729	2.09	83
Solway	1,285	0.98	39	Sandwith	1,816	1.39	56
St John's	4,375	3.34	134	Seascale	2,282	1.74	70
St Michael's	4,067	3.11	124	St Bees	1,345	1.03	41
Stainburn	1,374	1.05	42			**Total Copeland**	1690
Wampool	1,327	1.01	41				
Warnell	1,542	1.18	47				
Waver	1,429	1.09	44		**Allerdale**	**Copeland**	**Both**
Wharrels	1,208	0.92	37	Eligibe population	75,535	55,269	130,804
Wigton	4,452	3.40	136	% per borough	58	42	100
		Total Allerdale	2310	Number to sample	2310	1690	4000

Table B.1– Stratified sample by electoral ward

Once the data has been stratified, and the numbers to be sampled from each ward is known, cases were selected. The selection each individual case is done by random sampling so that all individuals have the same probability of being included in the survey. Cases are not substituted back in after selection, avoiding the possibility of the same individual being selected twice. Given the large population size compared to the sample size, replacement is not necessary, as the probability of subsequent cases being selected is hardly altered. If the sample size were near to the population size, then this would be different, as towards the final cases the probability of selection gets considerably larger as there are fewer and fewer cases left to draw from.

Random sampling is preferable to systematic sampling in this case. When using the electoral register as a sampling frame the cases are grouped geographically by polling district. Selecting, say, every 10th item in the list could lead to geographical clustering of the cases selected within each electoral ward. Random sampling thus ensures an unbiased geographical selection of cases from within each ward. Combined with the stratification by electoral ward, this ensures an even coverage of cases across the area.

The method by which the random selection is done involves assigning each case a long random number (with no duplication). Cases are then ordered by the random number to randomise the list. The required number of names and addresses are then taken in the new, random order. Tables 5.4 and 5.5 below show, for a hypothetical sample, the effect of this method of randomisation.

FRAME NO.	DUPLICATE FRAME NO.	RANDOM NO.	Postal District	Name	Address
1	1	0.872277507	A1	A	1 First Street
2	2	0.35888885	A1	B	2 First Street
3	3	0.170666794	A1	C	3 First Street
4	4	0.879492496	A1	D	4 First Street
5	5	0.609291538	A1	E	5 First Street
6	6	0.145156502	A1	F	6 First Street
7	7	0.980672085	A1	G	7 First Street
8	8	0.191508311	A1	H	8 First Street
9	9	0.301820995	A1	I	9 First Street
10	10	0.25562565	A1	J	10 First Street
11	11	0.186443681	A2	K	1 Second Street
12	12	0.560790917	A2	L	2 Second Street
13	13	0.050609233	A2	M	3 Second Street
14	14	0.606800333	A2	N	4 Second Street
15	15	0.591501581	A2	O	5 Second Street
16	16	0.46794834	A2	P	6 Second Street
17	17	0.542128717	A2	Q	7 Second Street
18	18	0.733236284	A2	R	8 Second Street
19	19	0.317279486	A2	S	9 Second Street
20	20	0.725852197	A2	T	10 Second Street

Table B.2 – Sample frame before randomisation

FRAME NO.	DUPLICATE FRAME NO.	RANDOM NO.	Postal District	Name	Address
1	13	0.050609233	A2	M	3 Second Street
2	6	0.145156502	A1	F	6 First Street
3	3	0.170666794	A1	C	3 First Street
4	11	0.186443681	A2	K	1 Second Street
5	8	0.191508311	A1	H	8 First Street
6	10	0.25562565	A1	J	10 First Street
7	9	0.301820995	A1	I	9 First Street
8	19	0.317279486	A2	S	9 Second Street
9	2	0.35888885	A1	B	2 First Street
10	16	0.46794834	A2	P	6 Second Street
11	17	0.542128717	A2	Q	7 Second Street
12	12	0.560790917	A2	L	2 Second Street
13	15	0.591501581	A2	O	5 Second Street
14	14	0.606800333	A2	N	4 Second Street
15	5	0.609291538	A1	E	5 First Street
16	20	0.725852197	A2	T	10 Second Street
17	18	0.733236284	A2	R	8 Second Street
18	1	0.872277507	A1	A	1 First Street
19	4	0.879492496	A1	D	4 First Street
20	7	0.980672085	A1	G	7 First Street

Table B.3 – Sample frame after randomisation

Increasing response and dealing with bias

Observational errors are those associated with measurement and processing, i.e. the design of the survey and the pre-analysis treatment of the data (Umbach 2005: 93). The more important of these two being the avoidance of measurement error by ensuring the survey instrument is well designed and any potential issues are highlighted and amended prior to data collection. Umbach (2005: 93-94) offers three suggestions for the reduction of measurement error, principally having a defined objective and thus knowing what it is that any survey should be able to show, carefully wording questions to achieve this efficiently, and then rigorously testing the survey through focus groups, cognitive interviews and pre-testing. This, which time consuming, can avoid issues at a later stage which could potentially render the whole exercise of surveying meaningless. Following on from survey design related issues, the next major source of error is the actual collection of data and its treatment post-collection. One key source of error in any survey is through nonresponses, and

there is a wide literature on strategies to increase response rates, which will be explored next.

There are two types of non-response error; unit non response and item non response, the former being when a member of the sample fails to respond to the survey, and the latter when some questions are not answered (Umbach 2005: 97). It is possible that some respondents will not answer some questions on the survey. Some nonresponses are to be expected, and as with unit nonrepsonse, a 100% response rate is unrealistic. However, good survey design should attempt to anticipate and thus reduce item non-response. Methods such as pre-testing were covered earlier, and it is here that issues relating to possible systemic problems with any questions which may lead to multiple item nonresponses should be identified.

Ideally, a survey would achieve a complete response, but this is not the case. A low response rate has implications not only for the sample size obtained, but also for the sample characteristics i.e. over-representation of older people. Nonresponse bias can affect the validity of any findings. While there are methods to address this after the collection of data, which will be explored later, the most straightforward way to deal with potential non-response bias it to increase the response rate. However, there are a vast array of methods to do so, which vary in their effectiveness and their cost in cash and time. Edwards et a (2010) conducted a meta-analysis of 481 trails which evaluated 110 methods of improving response rates to postal surveys. The results are summarised in table 5.6 below:

Postal surveys Strategy	Odds ratio
Monetary incentives	1.87
Recorded delivery	1.76
Teaser on envelope e.g. suggesting participants may benefit from opening it	3.08
More interesting topic	2.00
Pre-notification	1.45
Follow-up contact	1.35
Unconditional incentives	1.61
Shorter questionnaires	1.64
Providing a second copy of the questionnaire at follow up	1.46
Mentioning an obligation to respond	1.61
University sponsorship	1.32
Non-monetary incentives	1.15
Personalised questionnaires	1.14
Hand written addresses	1.25
Stamped rather than franked return envelopes	1.24
An assurance of confidentiality	1.33
First class mailing	1.11
Questions of a sensitive nature*	0.94
Electronic surveys Strategy	Odds ratio
Non-monetary incentives	1.72
Shorter e-questionnaires	1.73
Including a statement that others had responded	1.52
More interesting topic	1.85
Lottery with immediate notification of results	1.37
Offer of survey results	1.36
Using a white background	1.31
Personalised e-questionnaires	1.24
Using a simple header	1.23
Using textual representation of response categories	1.19
Giving a deadline	1.18
Including a picture in the e-mail	3.05
Survey mentioned in subject*	0.81
E-mail includes male signature*	0.55

Table B.4 – Strategies for increasing response rates for surveys

(*These reduced response rates)

With postal questionnaires, the best way to increase response rate is to make

the questionnaire short and interesting, make the respondent feel important with

the use of personalised surveys, envelopes and first class stamps, pre-

notification and post-survey follow-up and the use of monetary incentives. Achieving all these can be a challenge and there have to be compromises.

Incentives introduce ethical concerns and budgetary issues for research. Budget and time also constrains the potential for pre-notification and follow-up, and the use of first class stamps rather than franked envelopes (which are cheaper and quicker to use). Personalising surveys is not necessarily possible, depending on how the sample frame is constructed i.e. if postal addresses are used without names. It is comes down to what is possible within the time and resource available.

The use of mixed mode survey methods, employing more than one method, such as combining postal with electronic delivery, is an option which is used increasingly by researchers. Millar and Dillman (2011) found that offering a choice of modes led to a lower response rate than either mail or web only. Later reminders offering the mail nonresponders an option of web response had a negligible effect. In a scenario where there was a 100% web access and a highly internet literate population, in this case university undergraduates, the mail only response rate was lower than for a more sophisticated method involving an initial mail contact with then email only follow-ups. However, other issues hamper the use of e-mail follow up for many studies, such as the lack of a comprehensive list of public email addresses, and the ease at which e-mails can be ignored. Thus, the key finding is that mixed modes lower response rates and offering a web based alternative mode as a later follow up to earlier mailings has a negligible effect (Millar and Dillamn 2011: 260; Medway and Foulton 2012: 733). However, after doing absolutely everything on the list, it is still unlikely to achieve a 100% response rate, and given the constraints upon

research in terms of cost and time available in any given project, this is even less likely in practice.

Methods for increasing response propensity unfortunately do not have a uniform impact on response rates, given that cases are all, broadly, different individuals (albeit with some shared characteristics which impact upon response propensity). Therefore, the particular 'lever' which will encourage participation can differ across the unit. Groves et al (2000) explore this through their theory of 'leverage-salience' whereby the decision to participate is a threshold, so potential participants weigh up factors such as topic, incentive, time and so on, and some of which are positive and other negative to differing extents. So, depending how much salience cases attach to the various elements, depends on whether they take part, and this is represented diagrammatically below, where the larger the ball the greater the salience attached to an issue, and issues to the right are positive, those to the left negative, thus tipping right represents a decision to participate. However, in a project where some strategies for increasing response rate are too time consuming, targeting different ones to different groups is even more so.
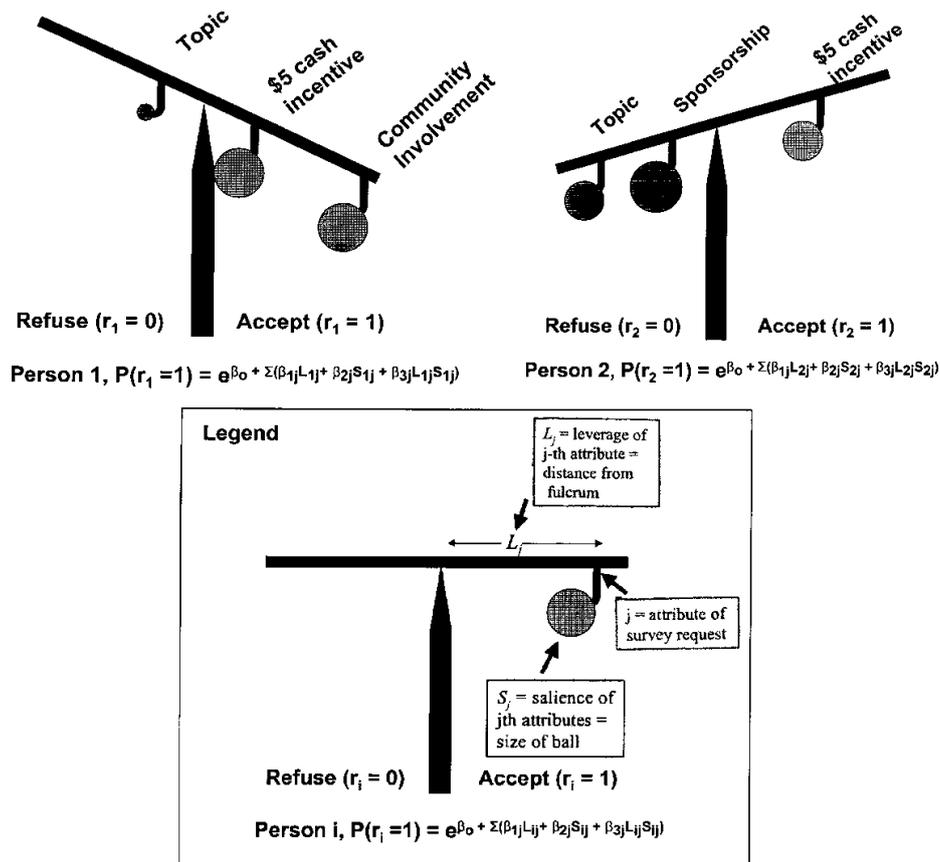
Figure B.1 – 'Leverage-Salience' model of response propensity for two persons with different leverages and silences associated with survey attributes (Groves et al 2000: 300)

The survey employed in this research was designed in such a way as to give it every chance of a higher response rate within the time and budget available. Starting with the strategies outlined earlier, the university was given prominence by having the covering letter on University headed paper and using university branded envelopes. In addition, the questionnaires were personalised as much as possible, with the name and address being printed on the envelope and the covering letter looking as personal as a 4000 print run can, with a scanned signature from the researcher. At all times confidentiality was assured, which was as much about ethical concerns as it was about response rate. Cost prevented many possible strategies from being implemented, including

incentives, recorded delivery, pre-notification, using stamps and first class mailing. Time constraints made hand written addresses, more fully personalised questionnaires and a follow up impractical. The strategy of having a more interesting topic is difficult, as the research is what it is, but in an attempt to at least make the topic seem worth the effort the local links of the researcher and the research were stressed in the covering letter in an attempt to draw upon feelings of obligation to the community.

The issue of non-response has so far been covered in terms of what the researcher can do to minimise nonresponse, but there are characteristics of potential participants which are known factors in their likelihood to cooperate. Response propensity has two broad elements, the internal to the case and external to the case. Those external have been covered, and in addition there are demographic characteristics of cases such as gender, age, education and others have known impacts on response propensity (Hoogendoorn 2008: 757). Their impact on survey results, bias, can be measured and acknowledged or corrected for.

There is a third type of nonresponse which may hinder those who wish to take part in the survey, but cannot, such as on grounds of disability or language, and these can be potentially serious in research focussing on migration, for example (Hoogendoorn 2008: 757). This is not a particularly major concern for this research in an area where nearly 98% of the population are white British, and nor were any disabilities known to cause any lowering of response rate. The font and layout of the survey was checked and changed to make it the most readable format possible.

Given that the response rate is not going to be 100% for a survey and not every respondent will answer every question, despite the lengths gone to in testing the survey and so on, it may be necessary to adjust the results obtained to provide a representative outcome. Taking these two issues separately – what to do about incomplete surveys, and what to do about skewed sample – there are solutions. The simplest method of dealing with incomplete surveys is to remove that unit from the sample all together. The obvious drawback being a reduced, potentially vastly, sample. In the case of this research there were 31 incomplete surveys returned, where two pages of questions were missed. These were the same pages on all 31, and were a result of the way the survey was printed and stapled by the printing contractor. These were all discounted.

A more general bias in the sample may emerge when certain 'types' of person are over- or under-represented i.e. the young, the well-off, the highly educated and so on. In such cases it is desirable to know to what extent the data collected is representative of the population. If those who have not responded are the same as those that have, there is not any issue as the sample is still representative, but as by definition non-respondents are not observed, this cannot be taken for granted (Littvy and Fazekas 2013: 569). There are, therefore, methods available to predict and counter nonresponse in survey data. Prediction of nonresposne, or response propensity, is useful for dealing with both item nonresponse and unit nonresponse. Knowing the characteristics of those most likely to respond and not respond to a survey is useful, as it should be considered when designing the survey to guide the selection of auxiliary variables, and also the sample frame. Firstly, the sample frame can provide a significant amount of contextual data depending on the source (e.g. address correlating to affluence), which could be used to determine potential common

types of unit nonresponse (Littvy and Fazekas 2013: 573). Secondly, by

knowing what characteristics common responders and non-responders have

should influence the selection of the auxiliary variables. Auxiliary variables are

those variables which are used in surveys to gather information about cases

which can then be used to assess the characteristics of the sample and

compare that against reliable sources of data elsewhere. The "best auxiliary

variables are those simultaneously correlated with response propensity and the

key survey variables" (Groves 2006: 699), so for example age is known to be

strongly associated with response propensity, as older people are less likely to

respond to surveys (Kreuter and Olson 2011: 327) and it is known that change

in identity is generational (Norris and Inglehart 2009). This knowledge about

what characteristics those nonresponders have is important for understanding

how representative the sample is and thus how reliable any findings are, and for

any post-survey weighting of the data if it is deemed necessary. In some cases

it may be necessary and useful to apply weighting (Umbach 2005: 99), indeed it

is "an important obligation of survey designers is to identify and collect auxiliary

variables useful for adjustment purposes" (Groves 2006: 699). The survey can

be seen in full in the appendices. The auxiliary variables are in the final section,

and include age, gender and education, all of which can be compared to the

most recent (2011) census data for the two boroughs in West Cumbria.

Survey delivery and return

Once the development of the survey was complete, it was tested on a sample of

100. This sample was drawn from the main sample by taking the 58 from

Allerdale and 42 from Copeland (as per the proportions of the total population in

each borough) and then as for the stratification for the full 4000, stratifying the

100 by electoral ward. In the subsequent main mailing, these people were not

re-surveyed as there were only minor changes to the wording of three questions. These changes which emerged fromt he pre-test sample were simply for clarity in questions which asked about occupational status. It emerged that this was ambiguous for those who were retired, so the questions were altered to ask not only what people do, but what they did prior to retirement, for those for whom that would be applicable. This meant asking "do, or did, you work in the nuclear industry?" instead of "do you work in the nuclear industry?". No other changes were made necessary following the test sample, and the survey was once again subjected to further ethical approval which was granted.

The main sample was then prepared. The logistical issues involved with a sample of 4000 were a challenge. Envelopes were specifically purchased with the reply address printed by the supplier, instead of overprinting existing university reply envelopes. 4000 external mailing envelopes were also purchased specifically for the purpose. Addresses were printed onto labels which were attached to the outgoing envelopes. Unlike for the test sample for which the surveys were printed by the researcher, this was not feasible for 4000 surveys which would have been 22,000 sheets of paper. The time and inconvenience to others was not acceptable, and the decision was taken to have them printed by a local commercial printing form. This, however, did alter the look and feel of the survey which may have detrimentally impacted response rates. The test survey was printed on all standard paper and stapled in the top right corner once, which did feel like it was prepared by hand for the purpose. The main survey however was in an A4 booklet form with the front and back pages being a silk paper and stapled twice. The more professional

result may have made the survey feel less personal, although there is no evidence to support this.

The main mailing was sent by second class post by the University of Central Lancashire mail room in the first week of April 2014, with all arriving at the sampled addressed by Tuesday 8th April 2014 and many slightly before. The majority of surveys were returned within one month, and the bulk of those were in the first two weeks. There were a large number of surveys returned as the person had moved or died. This was in part due to the fact that the electoral register used was from March 2013, and in at least one case where the person was deceased it was due to them being wrongly re-registered to vote following their death by someone at the household. Of those returned, 32 were rejected, of which 31 were due to large numbers of missing responses, and in all those cases it was the middle two pages of the booklet. In one case their number of answers which were contradictory gave the impression that they were filled in a purposely deceitful way. Some surveys were also returned completely blank.

In total 430 surveys were deemed suitable and inputted into SPSS, which was six short of the desired number based on the census figure, but well above the 383 required based on the 85,424 on the edited register. The reasons for the lower than expected response rate have been covered. There were 462 returned, which was above the lower 10% expected response rate, but as covered 32 were not included. Given the time and resource constraints, it was decided to go forward with the 430 as a sufficiently large sample for the purposes of this study rather than undertake any resampling. If this were aiming at being a commercial representative sample then the situation would perhaps be different.

APPENDIX C - SURVEY

WESTLAKES

Stephen Haraldsen
Doctoral Researcher
School of Education and Social Science
University of Central Lancashire,
Westlakes Science Park, Cumbria, CA24 3JZ
Tel: 01946 517234
Email: sharaldsen@uclan.ac.uk
www.uclan.ac.uk

Hello,

My name is Stephen, and I'm a postgraduate student with the University of Central Lancashire at the campus on the Westlakes Science Park near Whitehaven. My PhD is looking how we see our place as citizens in a local, national and global society, and the things that might impact that, including the presence of the nuclear industry.

This topic is of particular interest to me having grown-up and lived in the area all my life. In that time many changes have taken place to a point where things we consider normal now would have been extraordinary not so long ago.

It is your views, and those of others living in West Cumbria, which are vital to my research. By completing this survey you will be not only helping me with my project, but the findings will also contribute to local policy making by helping us better understand and adapt to the changes going on around us.

Completing the survey

- **Takes around 10 minutes**
- **Questions are all multiple choice**
- **All you need is a pen or pencil**
- **Just answer every question you feel able to answer**
- **Put in the pre-paid envelope provided and pop in a post box**

If you have any questions, don't hesitate to get in touch with me on the details above.

I'd like to thank you in advance for giving your time to complete this survey.

Yours sincerely,
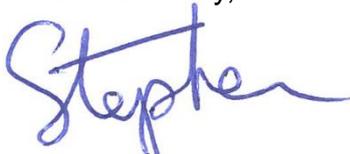
Stephen Haraldsen

Volunteer information

Please remember that you are under no obligation to complete the survey. However, once you return it, the answers you give cannot be removed from the study. Only those with a legitimate professional need will have access to these completed surveys. In the thesis and any subsequent publications, participants will not be identifiable as no data is collected which allows for this to happen.

If you wish to speak to the researcher's academic school or supervisory team, please contact Dr Antonio Cerella, School of Education and Social Science, University of Central Lancashire, Preston, Lancashire, PR1 2HE or call 01772 201 201.

Consent

By completing this survey you agree to take part in the study. No personal details are gathered, and consequently you are not identifiable in any way to the researcher or anyone else.

Please begin the survey on the next page.

Section 1 - Rights and responsibilities

1) **As UK citizens we have certain rights, such as to a fair trial, protection by the police and armed forces, and to certain benefits, such as a pension. There are also human rights, like a right to life, liberty and security of person.**

Below are some statements about rights. Please state how much you agree or disagree with each:

a) The only rights a citizen has are in their own country.

Disagree strongly	Disagree	Agree	Agree strongly
1	2	3	4

b) In an age when people can freely move around the world, we should grant citizenship rights to anyone who comes to the UK, pays tax and obeys the law.

1	2	3	4

c) There are basic, global human rights everyone is entitled to.

1	2	3	4

2) **Do you think that your actions can have global consequences?**

Yes 1   No 2   Don't know 3

3) **Do you think that global events have an impact on you?**

Yes 1   No 2   Don't know 3

4) **Below are some statements about the responsibilities that, as citizens, we may have towards others.**

Please state how much you agree or disagree with each:

a) My only responsibilities are to myself and my family.

Disagree strongly	Disagree	Agree	Agree strongly
1	2	3	4

b) I have responsibilities towards people where I live and/or come from.

1	2	3	4

c) I have responsibilities towards other people from my country.

1	2	3	4

d) I have responsibilities towards people regardless of where they come from.

1	2	3	4

Section 2 - Volunteering, charity and politics

5) Below are some statements about what sorts of causes, charities or voluntary organisations you might give money or time to.

If you had to choose among the four statements about various causes to donate to, which would be your first choice? And which second?

a) Only benefits local people.
b) Only benefits my fellow countrymen and women.
c) Specific overseas disasters (e.g. famines, tsunami).
d) Long-term global causes (e.g. climate change, rainforests, poverty).

First choice ☐   Second choice ☐

6) Do you, on purpose, do any of the following when shopping, rather than buy potentially cheaper alternatives? Choose as many as apply.

Buy fair-trade [1]   Boycott companies [2]   Buy local [3]   None [4]

7) How much interest do you take in issues which occur:

Locally?

None at all	Not much	A little	Quite a lot	Very interested
[1]	[2]	[3]	[4]	[5]

Nationally?

[1]	[2]	[3]	[4]	[5]

In Europe?

[1]	[2]	[3]	[4]	[5]

Globally?

[1]	[2]	[3]	[4]	[5]

8) Politics operates at various levels. Which level is the most important to you? And the second?

a) Local (e.g. borough or county council)
b) National (e.g. UK parliament)
c) European (e.g. European Parliament)
d) Global (e.g. United Nations)

First choice ☐   Second choice ☐

Section 3 - Identity and trust

9) **To which of these geographical areas do you feel you closest to? Which is your first choice? And which second?**

    a)   Town or locality where you live
    b)   Town or locality where you're from (if not the same as above)
    c)   West Cumbria
    d)   United Kingdom/Great Britain
    e)   Europe
    f)   The World

First choice ☐   Second choice ☐

10) **Below there are some different groups.**

Could you state for each whether you trust people from this group completely, somewhat, not very much or not at all?

People of another culture

Trust completely ☐ 1   Trust somewhat ☐ 2   Do not trust very much ☐ 3   Do not trust at all ☐ 4

People of another nationality

Trust completely ☐ 1   Trust somewhat ☐ 2   Do not trust very much ☐ 3   Do not trust at all ☐ 4

People of another religion

Trust completely ☐ 1   Trust somewhat ☐ 2   Do not trust very much ☐ 3   Do not trust at all ☐ 4

Section 4 - Work and leisure

11) **Which of the following most closely describes your work status?**

Employed ☐1   Self-employed ☐2   Homemaker ☐3   Unemployed ☐4   Retired ☐5

12) **What is your annual gross income (before tax and deductions)?**

£0-£19k ☐1   £20k-£39k ☐2   £40k-£59k ☐3   £60k-£79k ☐4   £80k-£99k ☐5   £100k+ ☐6

13) **Which of the following describes your current or former occupation? Please tick the one option which most closely applies.**

Manager, director & senior professional ☐1   Caring, leisure and other services ☐6

Professional ☐2   Sales and customer service ☐7

Associate professional and technical ☐3   Process plant and machine operative ☐8

Administrative and secretarial ☐4   Elementary i.e. cleaners, labourers ☐9

Skilled trade ☐5   Student (full-time) ☐10

14) **In your work, do or did you communicate or collaborate with colleagues from overseas?**

Regularly work/communicate overseas ☐1

Sometimes work/communicate overseas ☐2

Never or not applicable ☐3

15) **How often do you travel abroad for work and/or pleasure?**

Never ☐1   Less than once per year ☐2   Yearly ☐3   Several times per year ☐4   Monthly ☐5   More than once per month ☐6

16) **These days much of what was once done by British organisations has become international, like Sellafield now being run by a group of American, French and British companies.**

Do you believe that your rights in the workplace have been changed as a result of the internationalisation of ownership of firms?

Yes – positively ☐1   Yes – negatively ☐2   No ☐3   Don't know ☐4

PLEASE CONTINUE ON THE NEXT PAGE

17) **If you access the internet for personal reasons, please tick all of the uses below that apply.**

Keep in touch with friends/family	1	Accessing council/government services	7
Keeping in touch with groups I'm a member of	2	Supporting local and/or national campaigns	8
Social networking (facebook, twitter etc)	3	Supporting global campaigns	9
Gaming	4	Banking and bill-paying	10
News and current affairs	5	Music, films and TV	11
Shopping	6	Other	12

18) **Thinking about entertainment, such as television, films, books, theatre and so on, are what you prefer:**

Mostly British ☐1   Mostly American ☐2   Other ☐3   A mixture ☐4

19) **When you go out to eat, what foods/dishes/cuisines do you tend to choose?**

Mostly British ☐1   Mostly from overseas ☐2   Both/neither ☐3

20) **Other than your native language, how many additional languages do you speak?**

Two or more ☐1   One ☐2   None ☐3

21) **Where do you most often holiday?**

Locally in Cumbria ☐1   In Britain ☐2   Overseas ☐3

PLEASE CONTINUE ON THE NEXT PAGE

Section 5 – The nuclear industry

22) **Do or did you work in the nuclear industry?**

Yes – at Sellafield ☐1 Yes – not at Sellafield ☐2 No ☐3

23) **Does or did anyone in your household work in the nuclear industry?**

Yes – at Sellafield ☐1 Yes – not at Sellafield ☐2 No ☐3

24) **For those who don't or didn't work in the nuclear industry, does the company you work or worked for operate in countries other than the UK?**

Yes ☐1 No ☐2 Don't know ☐3

25) **For those who <u>do</u> consider themselves supporters of the nuclear industry, which of the following four statements most closely matches your opinion? And second most?**

a) Supports jobs in West Cumbria
b) Helps Britain to be less reliant on foreign sources of energy
c) Is important in the fight against climate change
d) Is the only way to meet energy needs of a rising global population

First choice ☐ Second choice ☐

26) **For those who <u>do not</u> consider themselves supporters of the nuclear industry, which of the following four statements most closely matches your opinion? And second most?**

a) Damages the local environment
b) Puts off other employers locating here
c) Accidents pose potentially global risks
d) Already harms the environment across huge areas

First choice ☐ Second choice ☐

27) **West Cumbria has hosted nuclear sites since the 1950s – which of the following statements most closely matches your opinion:**

West Cumbria deserves more from ☐1 West Cumbria does well ☐2
government than other areas for its service from the nuclear industry

PLEASE CONTINUE ON THE NEXT PAGE

Section 6 - About you

28) **How old are you?**

18-24 [1]   25-34 [2]   35-44 [3]   45-54 [4]   55-64 [5]   65+ [6]

29) **What is your gender?**

Male [1]   Female [2]   Other [3]

30) **Where were you born?**

West Cumbria [1]   England [2]   Rest of UK [3]
Europe [4]   World [5]   World [6]
(English speaking)   (non-English speaking)

31) **Which of the following most closely describes where you live now?**

A city [1]   A town [2]   A village [3]   Rural [4]

32) **What is the highest qualification you have?**

No qualifications [1]   University degree [4]
GCSE/CSE/O-Levels [2]   Postgraduate degree [5]
A-Levels [3]   Other (specify below) [6]

33) **How would you describe your class?**

Working class [1]   Lower middle class [2]   Upper middle class [3]   Upper class [4]

34) **Below there is a map of West Cumbria, divided into four areas – A, B, C and D.**
Please indicate below which of these four areas you live in.

A [1]
B [2]
C [3]
D [4]
None [5]
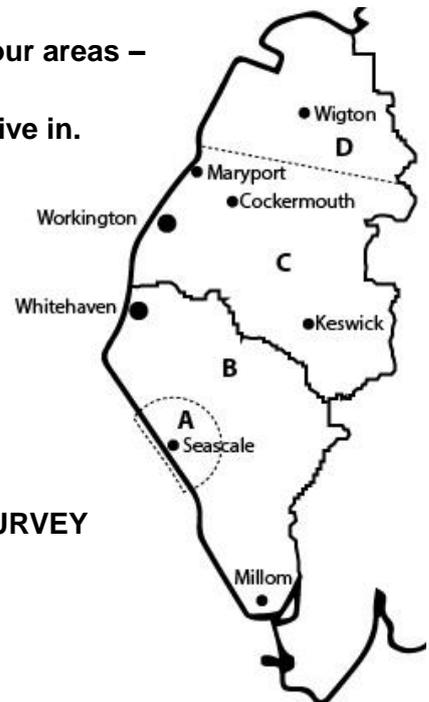
END OF SURVEY
THANK YOU FOR TAKING THE TIME TO COMPLETE THE SURVEY
PLEASE RETURN IN THE PRE-PAID ENVELOPE PROVIDED

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Volunteer Debriefing Sheet

Thank you very much for your participation. The information you have provided will be used to contribute to research on citizenship, prepared as part of a PhD thesis at the University of Central Lancashire.

Information you have provided will be used to examine how citizenship is impacted by what we think of as globalisation, and particularly how individual communities interpret economic, social and cultural changes associated with increasing global flows of physical and virtual resources, such as people, money and information.

Only those with a legitimate professional need will have access to these completed surveys. In the thesis and any subsequent publications, participants will not be identifiable as no data is collected which allows for this to happen.

If you have any questions about the study at a later date please do not hesitate to contact the researcher - Stephen Haraldsen - based at the following address:

University of Central Lancashire, Westlakes Science Park, Moor Row, Cumbria, CA24 3JZ.

If you have any questions, please email SHaraldsen@uclan.ac.uk or call 01946 517234.

If you wish to speak to his academic school or supervisory team, please contact Dr Antonio Cerella, School of Education and Social Science, University of Central Lancashire, Preston, Lancashire, PR1 2HE or call 01772 201 201.

Please feel free to keep this sheet in case you need to contact the researcher or his team at a later date.

Once again, thank you for giving your time to complete this survey.

www.thesamuellindowfoundation.com

APPENDIX D - FOCUS GROUP TOPIC GUIDE

Opening questions and housekeeping (2 minutes)

Welcome and thank you for giving up your time to take part in this focus group and research project on globalisation in west Cumbria.

To start, I would like to cover various elements of housekeeping and reiterate some of the points which are on your volunteer information sheets and consent forms.

You all know me, but probably not what I do day-to-day. I gave up work in 2012 to go back to university full-time as postgraduate research student at the University of Central Lancashire, but based on the Westlakes Science Park, where I'd worked since 2008. I'm carrying out research into the effects of globalisation upon west Cumbria. I'm supervised by Dr Antonio Cerella, and a team of academics within the School of Education and Social Science. Your volunteer information sheets have our contact details, should you need to contact any of us at any time.

Housekeeping – there are no planned fire alarms, so if one sounds please leave by the nearest safe exit.

Recording – the focus group is being recorded using the equipment on the table, but speak to each other, not the recorder. It's very good and will record you even if you aren't facing it.

Confidentiality – only those with a legitimate need will have access to the recordings and transcripts of this focus group, such as me, my supervisory team and a professional transcription company.

Data protection – all materials relating to this focus group and your participation are stored securely on the UCLan network, or encrypted while in transit to the transcription company, and hard copies are storied in locked filing cupboards, to which only I have a password or key.

Time – the focus group is restricted to 30 minutes

Structure – the focus group will start with personal introductions, then move on to a structured discussion on the topics of globalisation and citizenship specifically rights, obligations, participation and identity.

Personal introductions - if we could go around the table and briefly introduce ourselves, and why we decided to take part in this research project....

Globalisation (10 minutes)

Do you feel you are affected by things happening elsewhere in the world? How?

How do you interact with people, places and issues outside of Britain?

Citizenship (45 minutes)

What comes to mind when you think of the word citizen?

What makes a 'good' or 'bad' citizen?

What does citizenship involve on the part of both individuals and governments?

> *Rights (10 minutes)*
>
> What rights do you have? How do you feel they have changed?
>
> Human rights – what do they mean to you?
>
> Is there a bare minimum standard for rights that all should enjoy, or is it a matter for individuals to secure their own rights? If one does, what does it consist of?
>
> Are the rights of others outside your community or country as important as the rights for you and your fellow countrymen?
>
> *Duties (10 minutes)*
>
> Part of being a citizen is that rights come with obligations, such as to obey the law, pay your taxes and so on. What obligations do you have to others and to the country?
>
> Do you feel you have obligations to citizens elsewhere in the world? What are they? And if not, why?
>
> Are our obligations as citizens changed by globalisation and risks such as climate change, pollution and easy movement of people and things across borders?
>
> *Participation (10 minutes)*
>
> Do you take part in voluntary activities in the community? Why/why not?
>
> Do you support international organisations, such as environmental campaigns (Greenpeace, friends of the earth etc), anti-poverty campaigns, or any other global organisation?
>
> Do you see yourself as being able to affect or influence global issues, even in   a small way?
>
> Can local action or local politics affect global issues?
>
> *Identity (10 minutes)*

There are many different ideas about what globalisation means, from borderless words and the Americanisation of our culture, to it not meaning much. Do you think Britishness and other national identities are on the way out? Is a global identity emerging?

What do you feel closest to? Your town, west Cumbria, England, Britain, Europe, the world or other?

Can you be close to more than one? Are you? Can you rank them in order of closeness?

What does it mean to you to be west Cumbrian?

Do you feel European or global?

Close (5 minutes)

Considering all we've talked about, I'd like to return again to what you think it means to be a citizen in west Cumbria in the current day, with our interconnected society and all the changes that implies.

Do you feel the free movement of people, information, money and so on across international borders changes the meaning and status of citizenship? Does it change your personal, day-to-day life?

Is anything anyone wants to say, reflecting on the discussions we've had?

Wrap-up (0 minutes)

Thank you all very much for your time. Please can I give you each a volunteer debrief sheet, which includes my details and those of the supervisory tam, should you need to contact either of us. It also includes information we covered at the start regarding consent, confidentiality, data protection and so on.

Once again, thank you very much for your time, and have a safe journey home.

APPENDIX E – FOCUS GROUP HANDOUTS

The Global and the 'Glocal':
Exploring the relationship between
space and place in West Cumbria

Volunteer information

This study sets out to examine the effect globalisation has upon West Cumbria, specifically focussing on the local government policy response, effects stemming from globalisation of the workplace, and wider community impacts.

You have been invited to participate due to your living and/or working in West Cumbria. Information you provide will be used to understand how globalisation impacts communities and individuals. Please remember that you are free to withdraw at any time without providing a reason for doing so and that you may refuse to answer any question put to you.

Only those with a legitimate professional need will have access to recordings or transcripts of the focus group. In the thesis and any subsequent publications, participants will not be identifiable. Pseudonyms (made-up names) will be used in conjunction with either the town or profession to attribute direct quotations. It is not envisaged that any sensitive material will emerge from the survey however in the event of any sensitive information emerging, measures the use of false names will ensure as far as possible confidentiality is maintained, with participants reserving the right to withdraw part or all of their consent.

The researcher is Stephen Haraldsen and based at the following address:
University of Central Lancashire, Westlakes Science Park, Moor Row, Cumbria, CA24 3JZ.
If you have any questions, please email SHaraldsen@uclan.ac.uk or call 01946 517234.

If you wish to speak to his academic school or supervisory team, please contact Dr Antonio Cerella, School of Education and Social Science, University of Central Lancashire, Preston, Lancashire, PR1 2HE or call 01772 201 201.

Consent form

The form below is to ensure that you are willing to take part in this study and to let you understand what it entails. Signing this form does not commit you to anything you do not wish to do. Contact details are gathered to enable the researcher to contact participants in the unlikely event that there is a material change in the nature of the research which would necessitate reviewing the consent given. Please indicate your response to the following questions by deleting as applicable.

Have you read the volunteer information above?	Yes	No
Have you had the opportunity to ask questions and discuss the study?	Yes	No
Have you received satisfactory answers to your questions?	Yes	No
Do you understand that anonymity shall always be attempted but cannot be guaranteed?	Yes	No
Do you understand that you are under no obligation to complete this survey?	Yes	No
Do you agree to take part in the study?	Yes	No

Name:
Address:
E-Mail address: Telephone number:
Signed: Date:

The Global and the 'Glocal': Exploring the relationship between space and place in West Cumbria

Volunteer Debriefing Sheet

Thank you very much for your participation. The information you have provided will be used to contribute to research on the impacts of globalisation, prepared as part of a PhD thesis at the University of Central Lancashire.

Information you have provided will be used to examine how the impacts of globalisation are diverse, and particularly how individual communities interpret economic, social and cultural changes associated with increasing global flows of physical and virtual resources, such as people, money and information.

Only those with a legitimate professional need will have access to recordings or transcripts of the interviews and focus groups. . In the thesis and any subsequent publications, participants will not be identifiable. Pseudonyms (made-up names) will be used in conjunction with either the town or profession to attribute direct quotations. It is not envisaged that any sensitive material will emerge from the interviews and focus groups, however their semi-structured nature means the researcher cannot guarantee the content. In the event of any sensitive information emerging, measures such as the use of a false name will be discussed with the affected participant to ensure as far as possible confidentiality is maintained, at all times with the right to withdraw part or all of their consent.

If you have any questions about the study at a later date please do not hesitate to contact the researcher:

Stephen Haraldsen
University of Central Lancashire
Samuel Lindow Building
Westlakes Science and Technology Park
MOOR ROW
Cumbria
CA24 3JZ

Email: SHaraldsen@uclan.ac.uk
Telephone: 01946 517234.

If you wish to contact his academic school or supervisory team, the address is:

Dr Antonio Cerella, Lecturer in International Relations
School of Education and Social Science
University of Central Lancashire
PRESTON
Lancashire
PR1 2HE

Telephone: 01772 201 201

Thank you once again for taking part in this research.

APPENDIX F – MEMBERSHIP OF THE WEST CUMBRIA STRATEGIC FORUM

This list of membership of the West Cumbria Strategic Forum is drawn from the Memorandum of Understanding between government and west Cumbria (DTI 2004: 21)

WEST CUMBRIA STRATEGIC FORUM

PROPOSED MEMBERSHIP

National

Secretary of State DTI (Chair)

Treasury

Cabinet Office

Office of the Deputy Prime Minister

Department for Transport

Department of Environment, Food and Rural Affairs

Department of Culture, Media and Sport

Department of Work and Pensions

Department for Education and Skills

Home Office

Department of Health

Nuclear Decommissioning Authority

Number 10 (Geoffrey Norris)

Regional

North West Development Agency X 2

North West Regional Assembly

Cumbria Vision

West Lakes Renaissance

Rural Regeneration Cumbria

Cumbria Inward Investment Agency

Cumbria Learning and Skills Council

Business Link Cumbria

Cumbria Tourist Board

Local

Cumbria County Council X 2

Allerdale Borough Council X 2

Copeland Borough Council X 2

Business Sector X 2

Trade Union X 2

West Cumbria Strategic Partnership Chair

Nuclear Opportunities Manager West Lakes Renaissance

Other

Tony Cunningham MP (Workington)

Jack Cunningham MP (Copeland)

Secretariat : Department of Trade and Industry / Government Office North West

APPENDIX G – ETHICAL APPROVALS

11th April 2013

Antonio Cerella & Stephen Haraldsen
School of Education & Social Science
University of Central Lancashire

Dear Antonio & Stephen

Re: BAHSS Ethics Committee Application
Unique Reference Number: BAHSS 111

The BAHSS ethics committee has granted approval of your proposal application 'The Global and the 'Glocal': Exploring the relationship between space and place in West'.

Please note that approval is granted up to the end of project date or for 5 years, which ever is the longer. This is on the assumption that the project does not significantly change, in which case, you should check whether further ethical clearance is required

We shall e-mail you a copy of the end-of-project report form to complete within a month of the anticipated date of project completion you specified on your application form. This should be completed, within 3 months, to complete the ethics governance procedures or, alternatively, an amended end-of-project date forwarded to roffice@uclan.ac.uk quoting your unique reference number.

Yours sincerely

Colin Murrell
Deputy Vice Chair
BAHSS Ethics Committee

14th August 2013

Antonio Cerella & Stephen Haraldsen
School of Education & Social Science
University of Central Lancashire

Dear Antonio & Stephen

Re: BAHSS Ethics Committee Application
Unique Reference Number: BAHSS 111 Phase 2

The BAHSS ethics committee has granted approval of your proposal application 'The Global and the 'Glocal': Exploring the relationship between space and place in West'.

Please note that approval is granted up to the end of project date or for 5 years, whichever is the longer. This is on the assumption that the project does not significantly change, in which case, you should check whether further ethical clearance is required

We shall e-mail you a copy of the end-of-project report form to complete within a month of the anticipated date of project completion you specified on your application form. This should be completed, within 3 months, to complete the ethics governance procedures or, alternatively, an amended end-of-project date forwarded to roffice@uclan.ac.uk quoting your unique reference number.

Yours sincerely

Megan Knight
Vice Chair
BAHSS Ethics Committee

19th November 2013

Antonio Cerella & Stephen Haraldsen
School of Education & Social Science
University of Central Lancashire

Dear Antonio & Stephen

Re: BAHSS Ethics Committee Application
Unique Reference Number: BASHH 111 Amendment

The BAHSS Ethics Committee has approved your proposed amendment to your application 'The Global and the 'Glocal': Exploring the relationship between space and place in West Cumbria'.

Yours sincerely

Megan Knight
Vice Chair
BAHSS Ethics Committee

26th February 2014

Antonio Cerella and Stephen Haraldsen
School of Education & Social Science
University of Central Lancashire

Dear Antonio & Stephen

Re: BAHSS Ethics Committee Application
Unique Reference Number: BASHH 111 Amendment

The BAHSS Ethics Committee has approved your proposed amendment to your application 'The Global and the 'Glocal': Exploring the relationship between space and place in West Cumbria'.

Yours sincerely

Megan Knight
Vice Chair
BAHSS Ethics Committee