

**Public Perceptions and the Nuclear**

**Industry in West Cumbria**

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## *1. INTRODUCTION AND SUMMARY*

### *1.1 BACKGROUND*

This report is concerned with current public attitudes in West Cumbria towards the nuclear industry. It is the work of the Centre for the Study of Environmental Change (CSEC) at Lancaster University, with Environmental Resources Limited (ERL).

The research has explored the feelings and opinions of people in West Cumbria towards the present and possible future development of the nuclear industry in the area (focused on Sellafield), including the projected Nirex repository. Through a review of socio-economic data, and interviews/discussion groups of sample local residents, it draws conclusions about public attitudes towards risk arising from the relative dependence of the local economy on the industry, now and under possible future circumstances.

The study has drawn on particular expertise in:

- the economy and sociology of West Cumbria;
- the history and evolution of Sellafield/Windscale;
- public attitudes towards nuclear power; and
- the constitution and dynamics of public perceptions of 'risk'-generating industries.

The research was conducted between October 1992 and March 1993 at Lancaster and in West Cumbria. By agreement, the research team have worked in virtually total independence from the County Council, in order to avoid local bias or preconceptions.

### *1.2 APPROACH*

The overall aim of the study has been to throw fresh light on the nature of attitudes towards the nuclear industry and its associated risks, held by individuals in the area around Sellafield.

The principal device used to explore such outlooks has been a series of discussions (including 'focus groups'), involving a spectrum of individuals from the area, selected carefully to help capture and reflect the dispositions of a cross section of the local population.

To inform such discussions, the research team first undertook a body of background research, on the recent socio-economic and industrial history of the area and on possible 'scenarios' for the future development of the nuclear

industry overall (and of Sellafield in particular). Some of this research is reflected in, respectively, Chapter 2 and Annex A of the report. Its manner of use in the context of the subsequent 'focus group' discussions is described in Chapter 3. The essentially 'qualitative' research methodology employed has been preferred to the more 'quantitative', but arguably more one-dimensional, methods used in conventional opinion poll or attitude surveys. Many social researchers are of the opinion that the latter methods tend to make assumptions about the very nature of 'public attitudes' which can be misleading for policy purposes.

Versions of the researchers' chosen qualitative research method - focus groups - are now being used increasingly not only in social scientific research contexts, but also in industrial market research, because of the depth of understanding of the basic character, as well as of the contents, of individuals' (and groups') attitudes which it can achieve.

In undertaking the study, the researchers have also found it necessary to reflect their understanding of (indeed their active intellectual involvement in) current national and international debates about risk assessment research per se. This is a field of considerable contemporary intellectual ferment, on both sides of the Atlantic - reflected, for example, in the recent Royal Society report, '*Risk: Analysis Perception and Management*' (1992). The relevance of this debate to the present study lies in the fact that appropriate groundrules for the analysis, understanding and public treatment of public risk 'perceptions' are currently a subject of much expert debate, albeit the complex nature and integrity of such public perceptions is increasingly acknowledged. The present study needs therefore to be understood as itself a stage in a continuing wider debate of considerable public importance, over and above its potential significance for the immediate situation in West Cumbria. The study builds on current work at CSEC funded by the Economic and Social Research Council (ESRC).

In supporting the use of such qualitative methods to explore public 'attitudes' in depth, Cumbria County Council is at the forefront of practical developments in sensitive public consultation, in relation to vitally important planning issues and responsibilities.

### 1.3 SUMMARY OF THE REPORT'S MAIN FINDINGS

#### *Principal findings*

The principal findings of the research may be summarised as follows:

- In the 20th century, West Cumbria has had a substantial history of economic and social hardship, and of dependency on single industries. Attitudes of the local population towards Sellafield need to be understood in this context.
- Whilst the presence and currently dominant economic role of BNFL at Sellafield has brought certain significant benefits to the area - notably

large numbers of jobs, a range of local economic multipliers, and sponsorship for local activities - the industry's very dominance has led to something of a 'dependency syndrome' in much of the surrounding population. This, in turn, manifests itself for many local people in the 'burying' of a range of personal ambivalences and anxieties about Sellafield, its operations, and its implications.

- Standard attitude surveys and opinion poll methods fail to capture the range, complexity and rich texture of such local concerns about risk and dependency in West Cumbria. 'Attitudes', at least towards complex issues like nuclear power in a community, are found to be more open-ended, interdependent, multi-valent and thus less stable and discrete, than normally recognised. This has important practical implications for interpreting and responding to public behaviour and public expressions of support, opposition or indifference.
- There is extensive local public ignorance about the operations and processes used at Sellafield. Far from it being the case, as is sometimes claimed, that local acceptance of the industry rests on a greater-than-average understanding of nuclear power and its implications, such acceptance rests more on a fatalistic acceptance of the dominant local economic and employment role of Sellafield, with the accompanying risks, in the absence of any realistic alternatives for the area.
- There is considerable local resentment at the perceived withholding of information about leaks and other pollution incidents at Sellafield when they occur. Even though such episodes represent genuine dilemmas for the industry, they are helping to intensify continuing patterns of mistrust of BNFL, fed by past controversies and instances of questionable management.
- Greenpeace is seen by a significant number of local people as one of the most effective 'regulators' of BNFL, even by individuals who do not identify with its aims. This appears to be more a reflection of the fragility of trust in 'official' regulatory institutions than of any assumption of 'reliability' or 'objectivity' by Greenpeace, as a 'watchdog'.
- Individuals are more realistic about risks, uncertainties and lack of complete control than the nuclear industry and regulatory authorities appear to realise. Thus the industry is tending continually to undermine its credibility with local people, by its insistence on giving an impression of comprehensive certainty or control. There would be benefits from a more trusting and less 'anxious' approach to the public. The implications of any such change of outlook for national, as opposed to local, public relations would also need to be weighed; but present industry responses to communications with the public seem to be driven more by national considerations, with detrimental effects for local communications, relationships and perceptions.
- Working class people tend to feel more dependent on BNFL, and to express a general feeling of little-or-no choice. When they are critical of

the industry, this tends to issue in unqualified hostility, and greater resentments about risk and dependency than those of middle class people. This may reflect the latter's generally greater sense of freedom and flexibility: they have less sense of dependency and tend to disqualify themselves from opposition to nuclear-related development, because of their sense of choice either to move away or to remain living in the area.

- The Nirex proposals have little distinct identity in local people's minds; there is confusion about the relationship between Nirex and BNFL. However, Nirex is often seen as an outsider, unacceptable elsewhere in the country, and unlikely to generate much permanent local employment. The Nirex scheme is perceived as distant and barely relevant in personal terms, even by those who live close to the potential site. There are indications this may reflect a general retrenchment of horizons in the face of ill-defined threats, mistrust and a perceived lack of ability to affect the outcome one way or another.
- People bring more to their understanding of 'risk' than conventional technical approaches to risk imply. Conventional approaches fail to encompass important social dimensions which are integral and logical parts of people's framing of risk. Thus the public may feel disenfranchised by the lack of recognition of this wider agenda.
- West Cumbria is seen by at least a proportion of its residents as stigmatised in the eyes of the rest of the country by its perceived servile dependent relationship to the nuclear industry, come what may. This is exacerbated by the perception that West Cumbria has been the only place in the country compliant and dependent enough to accept it. Such a sense of stigma is intensified by the prospect of Nirex's handling of foreign waste produced by reprocessing operations at Sellafield- a possible outcome which appears unlikely to be regarded as acceptable, even if UK waste were to be (reluctantly) accepted.
- There is a brooding and recurrently observable resentment at the lack of adequate infrastructure (Transport, leisure, higher education, training, etc.) paid for by central government, to compensate the area for the sense of dependency and stigma arising from the industry's dominance.
- Despite considerable difficulties and anxieties, there are strong and diverse informal networks of social support and identification within the area, and a resilient determination to make the best of whatever particular situation exists.

#### *1.4 PRACTICAL IMPLICATIONS OF THE FINDINGS*

Three key findings have emerged which have immediate practical importance.

- First, local authorities like those in West Cumbria should play a more active, independent and 'representative' role in relation to public concerns about risk in the area, than they have done in the past. The research

confirms that the conventional methods used by the nuclear industry and public regulatory agencies (such as the Health and Safety Executive) to characterise public risk issues are too narrowly focussed. The latter's predominantly technical framing of such issues, as primarily matters for probabilistic risk calculation, neglects dimensions which are of central importance in public risk concerns. Such dominant technical framings are probably contributing, inadvertently, to the perpetuation of alienation and mistrust, by, in effect, denying the legitimacy of a wider and more complex public agenda. The area's local authorities thus have a particular opportunity - arising from their responsibilities towards the local population - to re-open for debate the conventional framings of risk issues handed down by the industry and regulatory agencies, so that these can be related more constructively to the broader, legitimate concerns of local people.

- Second, information practices at Sellafield need to be reconsidered in the light of our finding that people are generally more realistic about risks, uncertainties and lack of control than regulators have assumed. This would allow a more relaxed attitude on the part of the industry towards releasing information to the local population. Even though this might make the industry more vulnerable to national controversy, the prevailing culture of treating communications in a tacitly national context is having unrecognised negative effects upon local relations and attitudes to BNFL.
- Third, the sense of humiliation and stigma found in the local population needs to be recognised and associated with the frustrations in the area about the neglected infrastructure and dearth of more varied opportunities in employment, training and further education. It is evident that if this lack of investment is allowed to persist, it is likely to have significant negative effects on the willingness of local populations to accept foreign nuclear waste (or that generated by the reprocessing of foreign spent fuel), even were they to accept British wastes. Thus the infrastructure issue, as part of the deeper sense of isolation and neglect, is of more strategic importance than might be apparent at first sight, since it may have a major indirect impact on the self-perception of the community as a compliant receiver of waste facilities rejected elsewhere in the country.

## 1.5 *GENERAL OBSERVATIONS*

Three further general observations have arisen from the main findings:

- (a) The study, the first of its kind in relation to West Cumbria, constitutes a form of 'sensitivity analysis' of the measurements of public opinion (polls, attitude surveys) previously undertaken in the area. The latter have been interpreted as showing local acceptance of industry development proposals as true, well-informed, active espousal. Our research suggests rather that such acceptance is more fatalistic, self-denigratory and even negative. Hence the research provides a more cautious and arguably more realistic assessment of levels of public identification with development proposals in such situations. Such findings may well not be unique to this issue. In any case the study may

provide a useful precedent for cross-checking analogous future situations elsewhere, allowing a deeper exploration of materially important social and cultural dimensions of issues that have conventionally been treated in largely technocratic terms;

- (b) When comparable future 'risky' technological developments are proposed, it may be important to recognise and give more serious explicit attention to the understated psychological burdens loaded onto local communities caught in a double-bind of being dependent, yet often taken for granted and even stigmatised by a sense of neglect. As explained in Chapter 4 this burden appears to fall most heavily upon working class groups who have little general sense of choice and control;
- (c) Local authorities like Cumbria County Council and the District Councils find themselves in a novel and unenviable situation arising from the increasingly global nature of international commerce in the nuclear field. These broadening pressures and concerns tend to encourage the treatment of local communities and issues as subsidiary and residual. Yet qualitative studies like the present one, exploring the rich textures of local feeling on such matters, are potentially at the leading edge of more constructive emergent debate which can integrate local and wider considerations more maturely, and help simultaneously to define a new, more positive, democratic role for local government institutions, in a more and more self-consciously global context.

## 1.6 *CONTENTS OF THE REPORT*

The two chapters following (Chapters 2 and 3) set the context for the subsequent detailed observations on the 'focus group' discussions (Chapter 4) and conclusions (Chapter 5).

Thus Chapter 2 outlines relevant features of the social and industrial history of West Cumbria, the present employment and economic situation, and the ways in which the nuclear complex at Sellafield has developed in recent years.

Chapter 3 then explains the ways in which such background realities constitute key determinants of local 'risk perceptions', in a fashion which needs to be recognised as both rational and realistic. These observations are then related to 'state-of-the-art' expert debates about risk, on both sides of the Atlantic. An explanation follows of the appropriateness and significance of the 'focus group' methods for assisting understanding of these issues in new ways, and of the methods employed.

Chapter 4 reports in detail on the discussions in the focus groups themselves - effectively the core of the report.

Chapter 5 sets out the conclusions, some of which have already been summarised in section 1.3 above.

## 2. *WEST CUMBRIA - SOCIAL AND ECONOMIC BACKGROUND*

### 2.1 *INTRODUCTION*

The nuclear industry's relationship with West Cumbria dates from 1947, when the Atomic Energy Authority first established a production unit at Sellafield. From that point, a large industrial complex, using advanced technology, became established in a remote and relatively undeveloped corner of the north of England. To understand present local attitudes to activities at Sellafield, it is necessary to see them against a background of important local historical, cultural and socio-economic factors.

Thus, this chapter provides a framework for the examination and interpretation of current attitudes, by highlighting a range of relevant considerations. As will become apparent, the current local dominance of BNFL is seen to be in tension with other local activities (tourism, for example, and the development of a more diversified economy), in a fashion echoing those of other dominant industries in the area in the past.

The issues are considered under three headings:

Section 2.2: The historical development of agricultural (or predominantly rural) and industrial structures in West Cumbria and the social and economic effects resulting from the particular nature of this development.

Section 2.3: The contemporary socio-economic situation in West Cumbria and the position of British Nuclear Fuels in this context.

Section 2.4: Some reflections on the nuclear industry's historical and contemporary relationship with the community of West Cumbria.

## 2.2 *THE DEVELOPMENT OF AGRICULTURE AND INDUSTRY IN WEST CUMBRIA*

### 2.2.1 *Introduction*

A consideration of earlier periods of development in the West Cumbrian economy gives some insight to the historic rootedness of features which remain relevant to the socio-economic situation today. The region's historical development has contributed to its distinctiveness, in both the rural and the industrial spheres. The particular nature of industrial development that has taken place in West Cumbria and the profound influence this has had on social and economic life, through demographic changes and changes in employment structure, reflect the area's historical economic dependence on coal-related industry and its effects in bringing widely fluctuating economic prosperity to the area. Agricultural structures are viewed in the context of past land use traditions and consideration is given to the changing contexts and pressures on both the farming and the fishing communities in West Cumbria.

### 2.2.2 *The rural parish and agriculture in West Cumbria*

Williams' community monograph (1956)<sup>1</sup> of the parish and village of Gosforth (see map in Annex B) gives an historical insight into the rural area which now neighbours the site of the nuclear industry at Sellafield. Until the 1930's, rural parishes such as Gosforth maintained a way of life imbued with their own very particular cultural distinctions from other parishes, let alone other regions of the country. Williams describes the remoteness and isolation of the parish as having been instrumental in the retention of certain cultural features, in ensuring a freedom from the 'romantic invasion' of the Lake District and in contributing to the resistance of 'developments of a national character'. The independence and strength of the farming community in the area is attributed to (among other things) the unsuccessful introduction of the manorial system into this area of West Cumbria and the consequent retention of a large group of 'free farmers', coupled with the absence of the tied cottage.

### 2.2.3 *Agricultural structures in the 1990's*

The type of agricultural land holding in West Cumbria today reflects many of the traditional characteristics of the past, although the structure of the rural communities has undergone profound changes, in tune with other parts of Britain<sup>2</sup>. Gosforth now lies within the borders of the Lake District national park and has a distinctly more genteel feel, being largely inhabited by members of the 'service classes'<sup>3</sup> rather than agriculturally oriented professions.

Agriculture remains, however, an important sector in the economy of West Cumbria: the 1981 census shows farming and horticulture to be the 5th largest employment sector (employing economically active residents working in the area) in the district of Allerdale and the 8th largest employment sector in Copeland district. In addition, farming, fishing and related occupations in Allerdale and Copeland employ almost twice the national British average<sup>4</sup>.

The principal types of farming are cattle dairying and sheep grazing and the average area per holding is small<sup>5</sup>. Farmers' dependency on annual lambing or full quotas of milk means that their economic viability rests heavily upon environmental factors. Any public perception of radioactive blight on farm products would have a severe effect on markets, putting farm families in an economically vulnerable position, perhaps for extended periods of time. Such a situation would be exacerbated for hill sheep farmers whose economy is more restricted and less flexible than that of the lowland farmers. As previously noted by Wynne<sup>6</sup> the upland hill farming region in the Lake District is characterised by communities with a relatively distinctive cultural identity, sharing common historical traditions and recreational pursuits, common 'threats' (such as subordination to their role in the European context, and the accompanying demands of tourism, environmental standards and recreation), and above all, an unusually demanding livelihood as a way of life.

### 2.2.4 *The fishing industry in West Cumbria*

The fishing communities of West Cumbria share some of the demands of agriculturally based production. They are likewise increasingly tied into the European context, and are now subject to regulations over issues previously considered matters of judgement in highly localised and community-oriented structures. Some fishing ports such as Flookburgh and Workington have a well developed 'infrastructure' (such as freezer stores, daily deliveries from the port to markets etc.) that may help to secure the viability of this traditional industry in the face of increasing bureaucratisation; whereas others, such as the considerably smaller fleet at Whitehaven are in an economically more vulnerable position, being slightly further from markets, and lacking in the facilities afforded by the larger fleets.

#### 2.2.5 *The industrial economy*

1600 - 1900

An industrial base was first developed in West Cumbria in the 17th century, with the mining of coal and iron ore based in the towns of Maryport, Workington and Whitehaven. A subsequent trade in shipbuilding at Whitehaven, Workington and Maryport developed during the 18th and 19th centuries with Whitehaven becoming a major trading port in the early 19th century. From 1840 onwards, the production of iron and steel, based on high grade iron ore found in abundance in the area, led to an unprecedented influx of migrant workers to the coal fields of West Cumbria: Workington's population rose from around 6,400 in 1861 to 23,500 in 1891<sup>7</sup>, and the population of Whitehaven expanded from 8,742 in 1801 to 20,000 by 1900<sup>8</sup>. From around 1840 to the end of the 19th century, the industrial towns of West Cumbria were probably as prosperous, relatively, as they have ever been: this is illustrated by the number of public works and buildings erected during that period.

1900 - 1960

The industrial 'boom', as described above and by Long (1976), Jackson (1980) and others, was short-lived, owing partly to a change in smelting technology with the use of lower grade iron ore and partly to the gradual exhaustion of local coal reserves. Population levels in the 1890's remained 2-3 times higher than those 60 years earlier, however. The decline in industrial prosperity experienced around the turn of the century was exacerbated during the depression of the 1930's: levels of unemployment rose to 43% of the working population of Cleator Moor and to around 80% of the employable population in towns such as Maryport (ibid).

West Cumberland has benefited from uninterrupted regional assistance in the form of incentives to establish light industrial development since the Special Areas Act of 1934. Initiatives by the Board of Trade were set up after 1944<sup>9</sup> in order to encourage industrial development in those parts of the country where more employment opportunities were needed, particularly in the Development Areas, such as West Cumberland. The decision taken in 1947 to establish the production unit of the Atomic Energy Authority at Sellafield was described by the Development Commissioners for Cumberland as being, 'of no little significance and will have many repercussions upon the economic and social conditions of West Cumberland and especially the southern areas of the coal field'.

The site for the production pile for the UK atomic industry, as well as the chemical plant to separate plutonium from irradiated uranium, was chosen in 1947. The establishment of the 'Windscale Works' had, as predicted by the Commissioners, a considerable impact on the immediate and surrounding areas. Construction began in September 1947, requiring a labour force of nearly 5000 people, with a professional staff of architects, engineers, and surveyors, of over 300. As many people as possible were recruited locally, but 'some thousands'<sup>10</sup> had to be brought in from outside; for these, hatted camps, canteens and other amenities had to be built on the site. The first pile stack was built in the winter of 1949-50 and from this beginning, the expansion of the industry continued uninterrupted through the next 20 years.

Ten years after the start of construction at Windscale, the Development Commissioners for Cumberland were still concerned about the lack of diversity in the industrial base in West Cumbria. The establishment of the nuclear industry in the area had brought local employment, yet had not contributed significantly to a broadening of the industrial base due to its relatively insular nature. The remoteness of the coal field and its relatively small population, gave it little competitive power either with Carlisle or with those parts of southern and central England when the latter were attracting a high proportion of new types of industry relying largely on the domestic market<sup>11</sup>.

#### 1960-1990's

The 1960's were a period of considerable optimism and activity within the nuclear industry (Weldon 1991) with expansion in the field of research and development, design technology and the UK nuclear programme in general. In 1964, a second separation (or reprocessing) plant was built at Sellafield, to reprocess the spent fuel from power stations from the whole of the UK. Sellafield thus became the national centre for the management and reprocessing of spent fuel for a civil nuclear programme whose rapid expansion was confidently assumed. In 1971 the Atomic Energy Act split off the Production Group and the Radiochemicals Centre to form two separate companies: (BNFL) and the Radiochemical Centre Ltd (TRC - later to become Amersham International).

BNFL's Sellafield branch (other branches are sited at Risley and Capenhurst (Cheshire) Springfields (Lancashire) and Aldermaston (Berkshire)) was built largely on the existing staff and expertise of the Atomic Energy Authority already in situ. With this development came plans to extend the reprocessing business at Sellafield to cater for overseas as well as UK customers. Plans to build a third reprocessing plant (Thermal Oxide Reprocessing Plant, or THORP) to cater for Advanced Gas Reactor (AGR) spent fuel arisings from all UK and a number of foreign utilities were passed after the 'Windscale Inquiry' in 1977. The THORP reprocessing plant was under construction during the 1980's and was completed by the end of 1992. This latter period of construction brought new employment gains to the area: at the end of 1990, 7,600 people were 'directly' employed on the THORP construction programme, of which 3,430 have been estimated to be 'local'<sup>12</sup>.

#### 1992-1993

At the end of 1992, around 5,270 people were employed at BNFL working towards the commissioning of THORP. These numbers are presently declining and will stabilise at around 1,200 permanent staff in the THORP division and 890 permanent staff in other Sellafield divisions (supporting THORP) if commissioning proceeds as planned. During early 1993, the remaining construction workforce is being very rapidly reduced following the completion of the construction programme. Redundancies as a result of this are planned to take place throughout 1993<sup>13</sup>. Active commissioning of the plant is presently pending a revised licence being considered by Her Majesty's Inspectorate of Pollution (HMIP). The possibility that the plant will not be operated raises doubts for the continuity of employment for the THORP workforce<sup>14</sup>.

### 2.3 *THE CONTEMPORARY SOCIO-ECONOMIC SITUATION IN WEST CUMBRIA*

#### 2.3.1 *Introduction*

This section covers the present socio-economic situation in West Cumbria, focusing mainly on the area most affected by the presence of BNFL at Sellafield. The role of the nuclear industry within the context of the local economy is of primary interest and is investigated within the two Travel To Work Areas (TTWAs) of Allerdale and Copeland (illustrated on the map in Annex B). Some reference will be made to the third, less affected TTWA of Barrow.

The main economic concerns in West Cumbria are addressed in two documents: the submissions for Assisted Area Status for Copeland Borough and Allerdale Borough Councils<sup>15</sup>. These texts form the basis of the analysis discussed below. The importance of addressing the persistent economic problems of these three areas through regional policy is recognised by Cumbria County Council<sup>16</sup> as being an essential target for the 1990's. The main economic problems for the areas are perceived to be:

- high unemployment rates;
- over-dependence on the manufacturing industries;
- peripherality;
- lack of inward investment;
- dominance of the local economy by large single employers (including BNFL); and
- lack of resources.

An examination of these in turn illustrates the salient features of the socio-economic situation in West Cumbria in the 1990's:

#### 2.3.2 *Unemployment*

Unemployment is a serious and persistent problem, particularly in the coastal towns of West Cumbria; a situation which is exacerbated both by the present economic climate and the end of the construction and commissioning period at BNFL's THORP plant. The October 1992 figure for unemployment in Whitehaven is 9.7 per cent (narrow rate). The same for Workington is 13.6 per cent. A study carried out by Segal Quince Wicksteed<sup>17</sup> forecast unemployment rates to be 16.5, 17.7, and 15.4 per cent in the three TTWAs of Whitehaven, Workington and Barrow

respectively by the end of 1993. These forecasts rise well above the North West Region average of 12.3 per cent and above the national average of 11.5 per cent<sup>18</sup>.

Such numbers of unemployed may be expected to arise earlier than the end of 1993 in Whitehaven and Workington TTWAs if the commissioning of the THORP reprocessing plant at Sellafield is significantly delayed. Any subsequent decision not to operate the reprocessing plant could alter these figures, with direct job losses predicted to be around 1,250<sup>19</sup>. Conversely, if the plant is commissioned, 200 new jobs may come on line at the plant (ibid). It is not known whether the non-commissioning of THORP could be positive (arising from a construction programme for dry storage facilities at Sellafield) as is suggested by some commentators<sup>20</sup>, or negative, resulting in greater unemployment. This would depend entirely on BNFL's plans, the results of the impending nuclear industry review, government plans and the timing of new opportunities at Sellafield.

Long term unemployment (over 1 year) is an additional dimension to the problem with higher long term unemployed in urban rather than rural areas. Pockets of deprivation exist in individual wards in all three TTWAs: male rates of long term unemployment are over 50 per cent in some individual wards of Workington TTWA<sup>21</sup>. Whitehaven has sustained a long term unemployment average above the national rate since 1990<sup>22</sup>. Large scale redundancies are anticipated in all three TTWA's for 1993<sup>23</sup> and vacancy rates are reported to be low with a predominance for part-time or temporary employment. Although the local population is declining<sup>24</sup>, the workforce is, in fact, increasing; the demand for jobs is also increasing, reflecting contemporary age structures (a high proportion of people within an economically active age-group) and the shift towards higher proportions of women entering the workforce. A further difficulty is the lack of skilled workers, with a predominantly semi-skilled and unskilled labour force reflecting the traditional manufacturing base of the area. The self employed sector is not well developed: the rate in Whitehaven TTWA is the second lowest in the North West at 6.4 per cent, compared with a national average of 11.2 per cent<sup>25</sup>.

### 2.3.3 *Structural dependency on manufacturing*

As seen in previous sections, West Cumbria has both a history of heavy dependence on the manufacturing industries and a continuing reliance on manufacturing to sustain the local economy. The recent decline of the manufacturing sector during the 1980's has continued through into the 1990's in all three TTWAs. The structural dependency on this sector in terms of numbers of jobs is seen from employment census figures<sup>26</sup>, showing manufacturing in Allerdale to cover 27.8 per cent of the total number of jobs compared to a national average of 24 per cent. There are no significant regional or national service sector employers in health, education or financial services in West Cumbria and there have been no Government Departmental relocations to West Cumbria as a result of the policy of decentralisation<sup>27</sup>.

### 2.3.4 *Peripherality*

Whitehaven, Workington and Barrow TTWA all suffer from relative isolation and remoteness from markets. Industries in these areas are approximately 330 miles (6 hours by rail, 8 hours by road) from London; 6 hours by rail and plane to Paris or

Brussels, or 10 hours by road to Dover. Inadequate communications infrastructure is perceived to have a severely negative effect on inward investment<sup>28</sup> as well as putting pressures on existing firms in the area in the light of competition from other more accessible areas. Evidence suggests that poor road infrastructure from the West coast to the north/south bound M6, in addition to poor communications within the coastal belt of West Cumbria, are the cause of considerable local frustration<sup>29</sup>.

### 2.3.5 *Inward Investment*

The area of West Cumbria as a whole is indeed characterised by a lack of inward investment. This has been felt most keenly in Copeland Borough, and has been attributed to the lack of Assisted Area (AA) status in the Whitehaven TTWA<sup>30</sup>. This has been related, paradoxically, to the high levels of employment generated by BNFL in the 1980's as a result of the construction programme for THORP. The relative benefits obtained by AA status in Workington TTWA are seen in terms of inward investment, especially due to the benefits of grant status in attracting and sustaining non-UK firms in the area.

The impact of the nuclear industry on inward investment is seen in both positive and negative terms. Development agencies in the area (e.g. West Cumbria Development Fund) cite the importance of BNFL's contribution to economic development in recent years<sup>31</sup>. This can be seen as a synopsis in Annex C. The establishment in 1992 of Westlakes Science Park as a mixed venture between BNFL, the Rural Development Agency, and Cumbria County Council, is the most important development in this direction.

However, the urgency to diversify the economy as expressed by Copeland and Allerdale Borough Councils may not be addressed by such initiatives. Anxieties have been expressed<sup>32</sup> that the increase in such initiatives may lead to West Cumbria being seen as synonymous with the nuclear industry, since the firms or academic institutions targeted for the Westlakes Science Park are initially those that have connections with the nuclear industry. The concern has been expressed by both local borough councils that the poor image of the nuclear industry could be acting as a deterrent to inwardly investing firms, especially in the tourism and food processing industries. Again, such concerns remain ambiguous: the nuclear industry also represents one of West Cumbria's biggest tourist attractions through the Sellafield Visitor Centre which has had approximately 3/4 of a million visitors since its opening in 1988 and a record 160,945 visitors in 1992<sup>33</sup>.

### 2.3.6 *Dominance of the local economy by BNFL*

Dominance of the local economy by BNFL is cited in both the Workington and Whitehaven TTWA submissions for AA status as being a disadvantage to these areas, leading to an unbalanced economic structure. However, again, it is not entirely clear whether 'over-dependence' on the nuclear industry constitutes a disadvantage or an advantage. Allerdale Borough Council (1992) state that Sellafield is fundamental to the West Cumbrian economy, accounting for over 20 per cent of employment in West Cumbria: 33 per cent of employment in Copeland Borough consists of jobs at BNFL at Sellafield and 21 per cent of BNFL's industrial workforce is reported to be resident in Workington TTWA. BNFL directly employ approximately 7000 people at the Sellafield plant: this in itself constitutes a major

input into the local economy. The indirect employment and 'knock-on effects' arising from BNFL's operations equally make an important contribution to the local economy. In addition, BNFL have recently begun making significant capital contributions to assist the diversification of the local economy through local development initiatives (Annex C): this may be interpreted as a recognition of the vulnerabilities of the local economy to nuclear domination.

Both Allerdale and Copeland Borough Councils recognise the need for a diverse economy. As noted above, there are concerns that perceptions of blight created through the dominance of the local economy by BNFL may have negative repercussions on inward investment in the area. BNFL's recent contributions towards the development of the local economy are thus held in an ambivalent light by the local authorities. In addition to the local councils' concern, anecdotal evidence also suggests that the attraction of key personnel may be more difficult due to the poor public perception of the industry<sup>34</sup>.

Employment conditions within the industry as well as the structure of the workforce at Sellafield are important considerations in considering the benefits or disbenefits of this locally dominant industry. Good rates of pay, short working hours and long holidays (pers. comm. 1993) minimise the potentially dangerous situation of a dominant employer taking advantage (in terms of labour) of the local workforce. However, the nature of employment structures at BNFL has implications for other related aspects of the local economy. High wage levels may be included in a consideration of the difficulties of attracting inwardly investing firms to the area. The short-term nature of the direct and indirect employment gains provided for contractors at BNFL has been noted as providing some serious problems in the areas surrounding Sellafield<sup>35</sup>. Such fluctuations in prosperity have been recognised to have significant effects (both positive and negative) on local businesses, residential house prices and the rental sector<sup>36</sup>.

### 2.3.7 *Local Resources*

Regional assistance is thought to be needed in West Cumbria due to the problems reviewed above; many of these are inter-related and contribute to the economic inertia and persistent unemployment of the region. Allerdale Borough Council state that AA status was essential in the dramatic fall of unemployment figures from 22 per cent in 1985 to 8 per cent in 1990. Whitehaven TTWA acknowledge the benefits that Workington TTWA have received and are applying for AA status for 1993-2002.

Along with the loss of Assisted Area status, due in part to the temporary boom in employment during the 80's construction of THORP, Whitehaven TTWA has lost eligibility for Rural Development Grants (RDGs), the European Development Fund (ERDF) and other forms of selective financial assistance under the provision of the Industrial Development Act. The positive impacts of local initiatives (such as the Rural Development Commission and Cumbria Marketing Initiative) may be reduced due to the lack of inward investment to the area.

Both Whitehaven and Workington TTWA were recognised by the European Commission and the government in 1990 as an Objective 2 Region eligible for EC structural funds. An operational Programme for West Cumbria, including

Workington and Whitehaven, with a value of £11 million during 1991/1992, was used in the development of Moresby Bus Park and Westlakes Science Park, environmental initiatives, business support measures via WCDA and tourism initiatives. The area is reliant upon this type of support however, if the benefits are to 'feed back' into the local economy.

## 2.4 *THE NUCLEAR INDUSTRY IN WEST CUMBRIA*

### 2.4.1 *Introduction*

An atmosphere of optimism and belief in the future contributions of science for a better society permeated the post-war years in which the establishment of the nuclear industry took place. The strength of such optimistic values has been, to some degree, put under increasing strain with the evolution of the industry at Sellafield. The various accidents and other safety-related incidents that have occurred at the plant are reviewed in this section, and an examination of Sellafield as a centre of controversy illustrates the pressures that the industry and the local population have endured over the years. The past and present uncertainties over the future of THORP are put in the context of the changing rationales for reprocessing at Sellafield. Finally, a look forward to potential future developments in the nuclear industry in the area is given in the light of nationally and locally expressed concerns over the proposed Nirex repository.

### 2.4.2 *The establishment and development of the nuclear industry at Windscale*

The early 1950's are remembered in Britain by many as a time of rationing, fuel shortages and general austerity. In West Cumbria they were also times of unemployment and industrial structural crisis. However, the immediate post-war period also carried with it an ethos of considerable optimism and patriotism with an accompanying determination to steer the future of Britain for the better. The establishment of the UKAEA and the Windscale factory at Sellafield with the AEA's assertion in 1954 that, 'the war had ended and the atomic age had begun'<sup>37</sup> marked the insertion of a new 'scientific' culture into this part of West Cumbria and may be seen as reflecting the optimism and vision surrounding a future Britain, embracing military and civil expertise in a new and promising technology in which Britain saw itself as a world leader.

The construction of the Windscale production piles began in 1949, requiring a massive labour force of over 5000 people, and representing a major development in what was perceived to be a remote and depressed area of Britain. The Windscale Works was described as 'perhaps the most extraordinary factory in the country epitomising as it does the atomic energy industry of the future..<sup>38</sup>. Alongside this first notion of wonder and future potential, a second prominent discourse of the time was based upon a robust commitment to the belief that, with scientific expertise and the application of design principles, any technical problems could be solved: 'a competent engineer can design anything provided he is given the fundamental scientific information about the processes to be used..' (ibid). Pioneering and confident work was being done in the early years<sup>39</sup>. A third strand of the new discourses invoked a sense of great pride and achievement in the work: 'In less than five years a new industry worth some scores of millions of pounds was

built; every factory came into operation within a month of the estimated date; the cost of every plant was within a small percentage of the estimated sum and the first bulk output of plutonium was produced on the date specified. It is an achievement which will stand comparison with any other in the history of British industry..' (ibid).

The impact of the new development on the local community was perceived as a great contribution, bringing relief to an area in need of structural revitalisation. The impact of Windscale on the social life of the district is described by Jay (1954) as having been 'revolutionary'. New employment gains were set in the context of the local and national economic climate of the post-war period:' The opening of the Windscale Works brought new hope and life to them. This factory is permanent; it employs many people and it has a large professional staff. There is direct employment at the factory and indirect employment arising from the requirements of the factory staff for houses, food and recreation..' <sup>40</sup>.

For the workers at Windscale, 300 houses were built at the nearby seaside town of Seascale, and another 300 at Whitehaven. An increased demand for schools was a direct result of in-migration: in Seascale the County Council built a new school which was opened in 1951: the AEA commented: 'this has benefited others besides the workers in the atomic energy factory..' <sup>41</sup>. The development of the Windscale complex engendered significant growth in local population levels. Population in Millom grew by over 800 between 1951 and 1961; in Cleator Moor the figure was 700 and in Seascale the population increased threefold to over 2000 between 1931 and 1951. The population of the urban area as a whole grew by over 6000 in the period 1951-1961, much of which may be attributed to the early expansion of the Windscale complex <sup>42</sup>. Housing developments ensued in Thornhill, Egremont and Mirehouse. Infrastructural facilities such as roads and sewerage were funded by the local authorities, the County Council and the Water Authorities during a period of growth not experienced since the development of the iron and steel industry in the mid-nineteenth century.

The AEA saw its influence extend beyond economic boundaries: classes were organised for the further education of junior staff and facilities were used in the Windscale laboratories until a new technical college at Whitehaven was set up with AEA support. This is articulated by Jay with typical enthusiasm: 'A tremendous fillip has been given to the development of cultural and educational amenities in the district..' <sup>43</sup>.

The post-war period in which the establishment of the UK nuclear industry took place facilitated the easy adoption of views incorporating: a modernistic vision of an oncoming nuclear age; an unambiguous confidence in the ability of science to solve technical problems; a sense of mission, pride and achievement in the tasks involved; and lastly, a paternalistic spirit extending to the patronage of the local community. The local community was involved in the new revolution, but almost vicariously, perhaps as a traditionalistic and cautious onlooker in awe of the arcane mysteries of scientific expertise. To what extent it endorsed the new discourses remains a salient issue. The continuing importance of these discourses or sets of values lies in how far they remain unquestioned today, whether they still operate, and which of the issues involved have changed since the time these views were first expressed by the atomic energy industry in public in 1954. The answer to this

question has implications for the way in which public perceptions of the nuclear industry will be framed, especially in the local area.

### 2.4.3 *Accidents and health effects*

The early history of the Sellafield site (Section 2.4.2) illustrates the novelty of the nuclear industry in the period after the war, and the sense of real pride by those involved in a new and technically challenging technology, set in a wider modernistic vision of an 'atomic future' for mankind. The following section suggests that reactions to the first serious accident that occurred at the Windscale works, the 'Windscale fire', as well as subsequent accidents, have tended to be represented and interpreted publicly in a way that is consistent with that vision but which may be at odds with the realities of experience on the ground.

In 1957 the Windscale site suffered the world's worst nuclear accident before Chernobyl, when a nuclear pile caught fire and burned for some days before being quenched. At the time of the accident the knowledge of how to cope with such an accident was minimal: managers had to resort to swift improvisation, using (eventually) gallons of water to put the fire out. The accident is remembered, curiously in the 1990's context, as an exciting and challenging event:

" It was dramatic. I could see the fire dying out. I could see the flames receding and by about twelve o'clock I could see nothing. As far as I was concerned the fire was out, but we left the water going for another twenty four hours. Then we had a mess, because the water, which was radioactive now, was coming out all over the place. It flooded two forecourts. We really had a bit of a mess on our hands to clean up. The filters that were at the top of the chimney were very radioactive, particularly with radioactive iodine and certainly strontium".<sup>44</sup>

Estimates of the health effects of the fire<sup>45</sup> later indicated the significance of the accident in terms of damage to public health. However, these were only produced much later, and at the time the accident and its aftermath were shrouded in protective secrecy and ritual. The decommissioning of the Windscale piles has been a task of immense difficulty and, in 1993, remains yet to be completed.

The risks to human health and to the environment posed by the nuclear industry (as well as the limitations of our knowledge of the risks) have become the subject of much research as the industry has evolved in only the last forty five years. Sellafield has been the centre of successive controversies, accidents and events relating to its environmental discharges<sup>46</sup> and workforce radiation doses<sup>47</sup>, with increasingly powerful criticisms not only of allegedly inadequate management and regulation<sup>48</sup>, but also of poor scientific understanding of its environmental effects<sup>49</sup>, the problems associated with a policy commitment to fuel recycling, and, most recently, the site selection process<sup>50</sup> leading to Sellafield being proposed as a suitable site for a national deep repository for radioactive waste.

The attention of the media to issues surrounding the plant<sup>51</sup> has been constant and increasingly influential<sup>52</sup>: scientific reports, such as the Black report<sup>53</sup>, and the Gardner report<sup>54</sup> surrounding health and environmental issues are exhaustively covered and much of the media reporting is the focus of an increasingly combative

stance from BNFL<sup>55</sup>. Problems associated with the reporting of accidents has remained a huge and unresolved problem for the industry both in the national and the local context<sup>56</sup>. Despite significant investments in public relations BNFL have suffered a generally poor public image in terms of openness and honesty over the years.

#### 2.4.4 *Reprocessing at Sellafield*

##### *The early rationale for reprocessing*

Reprocessing was originally seen as a desirable practice, due to the belief that uranium would become a scarce commodity, and that the fissile plutonium also separated by the process, would replace uranium as a nuclear fuel with the future use of Fast Breeder Reactors<sup>57</sup>. In addition, it was thought that reprocessing would improve waste management, concentrating the most intense radioactivity contained in wastes to small volumes of high level waste which could then be stabilised in glass blocks. Reprocessing would thus help address the problem of radioactive waste management at reactor sites where there was inadequate capacity for on-site storage of spent fuel. Finally, reprocessing was seen as an essential part of the long-term vision of nuclear technology development which saw a future based around plutonium burning reactor systems<sup>58</sup>.

##### *The Windscale inquiry*

Debates surrounding the Windscale inquiry, held in the latter half of 1977<sup>59</sup>, included consideration of the political implications of reprocessing as well as the technical ones. However, the inquiry's rationalistic approach to the control of technology was maintained strenuously throughout. Criticisms of Mr. Justice Parker's ensuing report that it was 'barely a qualified endorsement of the BNFL proposals'<sup>60</sup> have, in effect, added 'information control' to the list of controversies associated with Sellafield during its history. At the same time, however, Justice Parker gave recommendations to strengthen the existing Sellafield Local Liaison Committee (a body of representatives from the nuclear industry and the local public) to give it increased independence and to improve the flow of information and relations between BNFL and local people.

##### *THORP*

The future of the newly completed THORP plant remains uncertain, pending a licence from HMIP and government endorsement of the commissioning of the plant. Again, the changed context since 1977 has brought unforeseen dimensions into the debate. From a technical viewpoint, uranium is no longer a scarce resource, the Fast Breeder programme has been halted, and some analysts fear that plutonium production is more of a liability than an asset, on both a national and a world-wide scale<sup>61</sup>. That over 70,000 submissions<sup>62</sup> have been sent to HMIP during the recent public consultation period suggests the huge level of concern surrounding the future of the THORP venture today.

##### *Radioactive Waste Management*

Prior to the 1976 Flowers report<sup>63</sup> there had been no major review of the status of radioactive waste management in Britain since the initial development of the industry. Equally, from the beginning of the nuclear industry in the UK, there had been no accepted policy to deal with radioactive waste arisings, as by-products of nuclear fission, or plutonium production. The destiny of solid radioactive wastes that could not be dealt with through

normal methods of storage and eventual disposal was openly reported by Bertin in 1957<sup>64</sup> to be 'one of the most vexed questions of atomic energy'.

Since the Flowers Report, the repeated shifts in UK policy for radioactive waste management<sup>65</sup> have been the cause of recurrent dismay and uncertainty, both by the public<sup>66</sup>, and from the Radioactive Waste Management Committee (RWMAC), resulting in mistrust and anxiety concerning the ability of Nirex to pursue its objectives to identify a secure site for the disposal of Low Level Waste (LLW) and Intermediate Level Waste (ILW) :

"In view of the past changes in policy, we believe it only proper to speculate on the consequences of a failure in the ability of Nirex to pursue its current objectives; if this were to occur there would be an undefined period of prolonged surface storage of ILW and possibly extended use of Drigg for LLW."<sup>67</sup>

The recommendation from the Flowers Report that,

"there should be no commitment to a large programme of nuclear fission power until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long lived, highly radioactive waste for the indefinite future."<sup>68</sup>

has been regarded widely as a key obstacle to further development of nuclear power, not only in Britain but internationally. Concerns not to proceed hastily with site investigations for a LLW and ILW repository have, however, been raised by RWMAC in their appraisal of Nirex's consultative document for a Rock Characterisation Facility (RCF) at Sellafield<sup>69</sup>. ERL have also noted that the current timing of the underground rock laboratory (or RCF) is unlikely to provide any detailed information in advance of the Nirex decision to proceed to the submission of a planning application for the repository<sup>70</sup>.

Nirex's choice of two potential sites - Billingham (for the deep disposal of long-lived ILW) and Elstow (for the shallow disposal of short-lived ILW and LLW)<sup>71</sup> - produced unprecedented public opposition<sup>72</sup>, a problem Nirex were keenly attempting to solve, when in 1986 the government announced a decision to follow an alternative route - to pursue a site selection procedure for the shallow disposal of LLW only. This was followed shortly after by a subsequent change in 1987 with the announcement of three further alternative sites for the shallow burial of both short-lived ILW and LLW<sup>73</sup>. Finally, the government decided to follow another option - to initiate a site selection procedure for the deep disposal of both ILW and LLW. This culminated in the selection of the two sites of Dounreay and Sellafield as locations in which further site investigations could take place.

A number of issues concerning Nirex's selection of Sellafield for the deep disposal programme have been raised<sup>74</sup>. Issues of concern cover the impacts a repository might have on Cumbria's infrastructure; the import of LLW and ILW into the county; the impact of continuing health controversies on confidence in safety parameters (particularly since the Gardner report); the issues concerning continual downward reassessments of exposure limits; the potential over-emphasis on commercial opportunities (rather than safety

parameters) as decommissioning costs and waste disposal costs are anticipated to rise; and lastly, the possibility that political expediency, and the considerable momentum expected to gain behind such a large project, will outweigh less favourable aspects of the repository unless the geology proves wholly unsuitable<sup>75</sup>.

Additional concern derives from the (as yet) unresolved problem of disposing with High Level wastes (HLW). Although HLW is now encapsulated in glass (or 'vitrified') at Sellafield, there appears to be no clear government policy as to how, or where, disposal might take place after the required storage of 50 years. This has led to conjecture and further worries that a future HLW disposal site may be located near to the proposed Sellafield ILW and LLW deep repository<sup>76</sup>.

## 2.5 *CONCLUSIONS*

This brief survey has described several aspects relevant to present-day attitudes towards the nuclear industry in West Cumbria. BNFL's local dominance as an employer and major economic presence has developed in a fashion consistent with previous patterns of single-industry rise and fall in the area. Moreover, the Sellafield complex has had a complex and controversial history. Indeed, in parallel with BNFL's continuing dominance in the area, there appears to be considerable unease on the part of some local authorities - probably reflecting a wider body of opinion - at the ever-greater dependency this has fostered at a time when unemployment in the region continues to be high.

In the next chapter we discuss the implications of these realities for the more detailed examination of public attitudes that then follows.

### 3. *EXAMINING PUBLIC PERCEPTIONS*

#### 3.1 *INTRODUCTION*

The previous chapter has discussed the socio-economic and historical context within which the nuclear industry has emerged in West Cumbria. The foundation of the extractive industries and subsequent establishment of related heavy industries brought people and a degree of (fluctuating) prosperity to West Cumbria. Developments in the nuclear industry, including the construction of THORP during the 1980's, have echoed the temporary booms associated with previous heavy industries in West Cumbria, bringing substantial numbers of jobs carried out by a largely skilled migrant workforce complementing equal or smaller numbers of local recruits<sup>77</sup>.

The development of the nuclear reprocessing industry has secured direct employment gains, both for temporary construction and permanent operational staff, for an area suffering persistent unemployment. BNFL remains the largest single employer in the area despite the substantial numbers of job losses following the end of the THORP construction programme. BNFL has also supported local cultural activities, some infrastructural improvements (for example, roads near to the Sellafield site) and more recently, development initiatives such as the Westlakes Science Park and the Cumbria Marketing Initiative (see Annex C). Its role in the various initiatives to revive the local economy constitutes a substantial financial contribution. However, the lack of diversity in the nature of the employment gains and the overall BNFL 'neighbour effect' in social and economic terms are acknowledged to create problems as well as benefits for the area. The reservations held by the Borough Councils concerning the dominant role of the nuclear industry in the area are now heightened by the proposal for the Nirex deep repository to be sited near Sellafield<sup>78</sup>.

The analysis in Chapter 2 reveals important pros and cons of the nuclear industry for West Cumbria. Whilst it has brought jobs and other economic benefits to the community, it may also have involuntarily courted a reputation for the area through its presence as a focus of recurrent controversies about nuclear safety - a reputation which may also disadvantage the community in other respects, including effects on its own self-esteem (see Chapter 4). In Chapter 2 we have also indicated something of the public discourses surrounding post-war nuclear development in West Cumbria, especially the contrast between high-flown, paternalistic scientific promises and aspirations and the more mundane realities confronting ordinary members of the public. It seems reasonable to suggest that such a multi-faceted, interactive and complicated socio-economic situation would 'produce' equally complicated and interwoven sets of feelings and attitudes relating to it. It is natural that attempts to define the issues with respect to further nuclear developments in West Cumbria should focus on the one side on jobs, and on the other side, on risks.

However, this simple dichotomy masks many important issues. Definitions of risk are fundamentally open to social negotiation, and scientific frameworks are recognised frequently to neglect important dimensions, dimensions that

lay people may well regard as central. Moreover, recent understanding of risk perceptions would suggest that attitudes towards specific topics cannot be divorced from the social and economic context within which they are themselves embedded, since these contexts (for example the persistent and presently rising unemployment in the area, or the perceived trustworthiness of the industry and its controlling agencies) must have a key bearing on perceptions of the industry and its attendant hazards. Consistent with this general point, it has been recognised that a logical part of people's risk perceptions is their experience of the organisations supposed to be in control of the risky activity. This involves the broader historical experience of the institutions and organisations which promote, operate and regulate the technology. As Wynne (1992)<sup>79</sup> has argued:

'more sense could be made of public responses to 'risks' by treating them as responses to the more grounded experience of technologies as both hardware and historically rooted social-organisational relationships'.

It has recently been accepted as a fundamental part of contemporary understanding of risk that public attitudes to risk are as much based on material social factors (and therefore fluid, conditional and full of ambivalences) as they are on perceptions of abstract and narrow technical definitions of certainties and probabilities. Indeed, the recent Royal Society Report on risk<sup>80</sup> stresses the importance of this understanding and its position within the wider debate surrounding risk management. This recognition also brings with it certain new challenges: most obviously, that risk perception be understood more thoroughly as a social phenomenon. The implications of this (in terms of the precise directions in which research investigation now needs to develop) are next explained.

### 3.2 *THE RISK DEBATE*

Systematic research to understand the basic nature of public perceptions of risks was begun in the early 1970's in the context of nuclear power controversies, and much of it has retained a 'nuclear' flavour<sup>81</sup>. The early research assumed that public anxieties over nuclear risks were exaggerated, and ultimately mistaken. This whole research tradition assumed that people's attitudes to risks could be objectively measured, as discrete sovereign individual orientations towards the same objectively existing risks as defined by scientists. This set of theoretical and methodological orientations characterised the influential tradition of psychometric research on public attitudes and risk perceptions<sup>82</sup>. Gradually however, it was appreciated that other beliefs and valuations of saliency influenced people's expressed perceptions of risk. These other considerations were not merely symbolic, as often assumed, but just as material to people as considerations of physical risk. For example, as Otway first pointed out, people may define and evaluate the risks of nuclear energy according to their beliefs about its social benefits, and the saliency to them of various other properties, such as its correspondence with economic and political centralisation. Thus it came to be understood that risk perceptions could not be unproblematically assumed to be focused on the same object, which was a necessary founding assumption of

methods of surveying and measuring attitudes and risk perceptions. The very assumption of objectively existing attitudes was thus called into question.

This contextualisation of risk definitions, and the associated acceptance that public perceptions of risk were logically shaped by their social context, was further developed when Wynne (1980) first observed that, in the face of chronic uncertainties, people were dependent upon expert institutions who supposedly controlled risks: hence public risk perceptions were rationally based primarily on their perceptions of the trustworthiness of risk managing institutions. This factor is inherently historical and contextual, involving evidence of previous social 'track record', and of the associated broader social demeanour of those organisations. Expert definitions of risk simply assume that such institutional frameworks are reliable. Thus 'objective' risk definitions take such institutional relationships and processes for granted as non-problematic; and in so doing they unwittingly narrow too far the framing of the public issue.

Thus the framing of risk perception research has developed logically from precise, narrowly-framed and decontextualised methods and observations, in which key prior assumptions about risk and risk perception were already embedded, towards more complex multidimensional, contextual studies of the social and institutional experiences and relationships within which risk definitions and debates arise and are negotiated by people<sup>83</sup>.

However, these research developments were not reflected in policy making and debate. Although industry and government bodies increasingly recognised the 'political fact' of amplified public perceptions of nuclear risks, this was still regarded by their experts as not grounded in relational facts, because the authorities still assumed the only basis of facts was narrow technical framing of risks. The Health and Safety Executive's studies (HSE 1988, 1992) concerning *The Tolerability of Risk from Nuclear Power Stations* illustrate this basic approach to risk and public perceptions.

Consideration of the relationship between social dependency and the key variable, in risk issues, of trust, is a core dimension to be considered in attempting to understand the public's notions of risk, and to understand public reactions. Social dependency is frequently mistaken as public trust in expert institutions. If, as is often the case, there is no observable public protest about a hazardous activity, it is usually assumed that this means the public accepts the hazard and trusts in the authorities who are meant to be in control. Yet research shows this to be radically misleading. Very often people may be at best ambivalent about the hazardous activity and its controlling bodies, but they do not necessarily express these misgivings or worse in public, because they feel they would be exposed to denigration, and that anyway it would be a futile protest. So they recognise their dependency on the experts; but even if they do not like this dependency, they may accept the (supposed) lack of power which this involves for them, and act as if they trust those institutions, even if in private reality they do not, or at least their stance is more qualified. A practical corollary of this point is that what looks like a fundamental shift in public attitudes when opposition develops, from complete acceptance to complete rejection, may actually reflect a minor change, in a more finely

balanced set of ambivalent feelings, about the development or activity in question.

This kind of analysis is supported by several research studies<sup>84</sup> making detailed qualitative methods open to contextual dimensions. Thus Jupp (1989) found that people living near hazardous chemical sites when asked if they trusted the company concerned, replied "so long as they are well-policed", which is a highly qualified concept of trust, one bringing to mind Gambetta's (1989) question, "can we trust trust?". Wynne (1992a) also found in a study of responses to scientific expertise after the Chernobyl accident that people shaped what they were prepared to believe according to its correspondence with the social networks with which they identified themselves. MacGill (1987) found similar informal social processes and private networks to be the crucial dimension of credibility of expert claims about radiation risks from Sellafield.

#### *Attitude surveys and opinion polls*

An acceptance that issues such as trust, and the impact of dependency in controlling appearances of trust, are fundamental inputs to the unravelling of risk perception in locally affected communities, suggests that a shift is needed away from traditional quantitative approaches to understanding public perceptions of risk. Quantitative studies, for example, often built around the aim of identifying an objective level of acceptable risk, unconsciously presuppose what is meant by risk, then measure public attitudes towards that imposed meaning, without first questioning whether the people involved share that assumed meaning<sup>85</sup>. The questions quantitative analyses (such as opinion surveys) can pose seem necessarily too simple to capture the complexity of people's positions, and have to impose prior assumptions that cannot themselves be tested. The results of such research methods are thus easily over-interpreted. Sociological explanations of public perceptions of risk illustrate that such surveys may be ill-equipped to capture, indeed they inadvertently conceal, the important social, historical, socio-economic and psychological factors that play a role, now recognised to be crucial, in forming people's experience and feelings about risk.

Using quantitative methods, public opinion surveys have reported the supposedly unique position of West Cumbrians in their attitudes to nuclear power and the disposal of radioactive waste<sup>86</sup> as compared to the general British public<sup>87</sup>. The latest survey of attitudes of Cumbrian residents towards Nirex proposals (ICM 1992), concludes that Cumbrian residents have more faith in the nuclear industry and in national regulations for the industry than have British people in general. The residents of Copeland (in particular) and Allerdale are reported to have the most positive attitude towards nuclear power<sup>88</sup> and the greatest amount of faith in the nuclear industry<sup>89</sup>. In matters of waste disposal, 50 per cent of Copeland residents and 42 per cent of Allerdale residents were recorded as expressing confidence in the industry's methods of disposing of nuclear waste, compared to 35 per cent of Cumbrian residents<sup>90</sup> and just 25 per cent of the British public generally<sup>91</sup>.

Results such as these are usually interpreted by the nuclear industry to indicate a local population that is more knowledgeable and more familiar with nuclear power and its risk attributes. Local residents are taken to be more accepting than the rest of the country because of their greater knowledge, the implication being that the rest of the country's fears are due largely to ignorance.

These polls may be accepted strictly within their own terms; but what they mean is more problematic. In the light of the foregoing considerations it has to be asked whether such polls are able fully to capture the range and complexity of perceptions that would be expected to arise from the complex socio-economic context of the nuclear industry in West Cumbria. The constraints imposed by aiming to obtain quantitative results mean that the ambiguities and multiple layers of meaning of particular subjects cannot be embraced - on the contrary, they need to be eliminated. Whilst recognising that opinion polls have uses in defining public attitudes to less complicated issues, reservations are in order as to their ability to capture the more subtle forming influences (such as trust and dependency in social relationships) in the public perception of risk and risk-generating institutions. Such considerations have influenced the direction of the present research towards the adoption of more qualitative, detailed and exploratory techniques.

### 3.3 *FOCUS GROUP RESEARCH*

Focus groups are becoming recognised increasingly as a valuable methodology for qualitative social research. In focus group discussions, the context of the debate becomes explicit, because this is (as in normal conversation) necessary for the discussion to take place. For the purposes of risk-related research, this is ideal, as it allows for the recorded construction of the intricate reasoning behind people's definitions of risk, and their feelings or decisions about risk. In this way, the social realities (for example those explored in Chapter 2) are naturally woven into an emerging picture of perceptions which develops from the different inputs of the individuals taking part in the groups. Furthermore, the interactive nature of focus groups allows the expression of important qualifications, conditions, and even contradictions in otherwise simply expressed attitudes.

#### 3.3.1 *The nature and constitution of the focus groups*

In practical terms, a focus group is essentially a structured group discussion, usually between up to ten participants and one 'facilitator'. A typical group would last between one-and-a-half and two hours. The aim of the focus group is to allow the participants to create their own dialogue, using their own meanings, centred around core subjects introduced by the facilitator. The facilitator may ask questions to encourage discussion, but in general his/her input is minimal. Definitions of the subject under discussion are formed by the

individuals in the group, and through the dynamic interactions between them. The discussion is recorded and transcripts form the basic material for analysis.

In this type of research, an important, though unaccustomed, aspect to be borne in mind, is that the selection of participants does not follow that employed in order to gain a widespread 'representative sample' as is the case in quantitative survey analyses. However, in focus groups, the participants are representative of significant fractions of the society to whom the subject under debate is of relevance. In other words, selection aims to tap a broad cross-section of social experience, but can and does make no claim to represent 'public opinions' at large, or for a particular sector of society. For qualitative social research (including focus group research), the aim in selection is to find participants who may be regarded as typical of relevant social categories, so as to explore the range and variability of meanings in the population at large. Much of the purpose of this kind of study is not to derive conclusions about the substantive contents of people's attitudes (for example, for or against specific developments), but about the basic structures of attitudes as such (for example, how stable are given expressions of attitudes; on what contextual factors do they appear to depend?). Of course, the latter have implications for the former; this is one reason why qualitative, interpretive methods are important in practical terms, as a kind of sensitivity analysis which helps more realistic interpretation of opinion and attitude survey results.

The selection procedure for the focus groups in the present case drew from the background research into the cultural and socio-economic situation in West Cumbria (as summarised in Chapter 2) in defining a relevant cross-section of the local population. Individuals were recruited for the focus groups using the following criteria: type of occupation; gender; geographic location; and family involvement with the nuclear industry. To reflect a broad cross section of the population in the area, we chose to select focus groups composed of farmers and fishermen, women with young children, professionals, and workers (apprentices) at Sellafield. A screening process for the recruitment ensured that none of the participants had been actively involved in pro- or anti- nuclear campaigns. In all groups, an attempt was made to obtain a broad range of ages, educational background, and length of time participants had lived in the area.

#### *BNFL apprentices*

Given the dominance of BNFL as a local employer and the focus of the study, representatives from amongst the workforce at Sellafield were selected for the analysis. Thus, four groups of apprentices presently serving their apprenticeships at BNFL were recruited (two apprentices in each group - all apprentices were young men). As one apprentice himself said: 'you've got the opinions of the workers there' (Apprentices, Group 1).

#### *Farmers and fishermen*

As noted in Chapter 2, agriculture remains a relatively important employer, and a dominant land-use in West Cumbria. Like fishing, it is particularly sensitive to potential blight arising from association with the nuclear industry.

Two groups of farmers were selected to represent this fraction of local society. A mix of dairy and sheep rearing farmers were recruited from two locations: the first in the direct vicinity of Sellafield; the second, from around the Keswick area in the heart of the National Park, but only around twenty miles distant. Screening procedures at recruitment ensured that none of the farmers had immediate family working at Sellafield.

In the farmers' group near Sellafield representatives of the local fishing industry were also sought (screened, like the farmers, to have no immediate family working at Sellafield). In all, this group consisted of three fishermen and four local farmers. The Keswick group consisted of eight local farmers. All participants in both groups were men.

#### *Working professionals*

Working professionals (in non-nuclear related employment) were the subjects of two groups: the first located in the Whitehaven area; the second consisting of people from the Keswick and Cockermouth area, and held in Keswick. None of the people in these two groups had immediate family working at Sellafield. Two of each group (group totals were nine and ten) were directly involved in the tourism industry. The remainder of the participants were from professions such as teaching, engineering, property agents, health and administration. These groups had an approximately equal ratio of men to women.

#### *Women and mothers*

Women who are mothers of young children are often under-represented in 'professional' groups and entirely absent in farming and fishing groups and women in general have been under-represented in surveys covering attitudes to the nuclear industry in the past<sup>92</sup>. In addition, many of the controversies of the nuclear industry have focused upon the health effects of radiation on children. Therefore four groups of women who had young children (under eight years old) were recruited. Two of the groups were held in Seascale, and the other two groups were held in Whitehaven, with women from both Whitehaven and Workington participating. There were four participants in each of these groups.

The women in the two groups held in Seascale all had immediate family working at Sellafield. The women in the two groups held at Whitehaven had no immediate family working at Sellafield. In each location, one of the groups consisted of women belonging to social class C2 or D/E ('working class'), and the other group consisted of women belonging to social class A/B or C1 ('middle class').

The selection of the twelve groups thus concentrated on particular group identities (BNFL employees, farmers, fishermen, mothers etc.) following the logic that the people contained within these broad classifications represent, in the most obvious sense, relevant sectors in West Cumbrian society. A range of

social class, age and length of years resident in the area were sought in order to explore variations in any one group.

### 3.3.2 *The procedure followed in the focus groups*

The twelve groups were conducted during the first week in March, 1993. In all groups except the apprentices', two researchers were present<sup>93</sup>. As a rule, only one researcher acted as the main 'facilitator'; the other following more of an 'observer' role and interjecting less frequently in order not to disrupt the conversational flow within the group and between the group and the facilitator.

Each group discussion lasted approximately one and a half hours. Groups were held either in participants' homes (this was the case for the mothers) or in a venue such as a hotel, pub or hall. The content of the discussions was as far as possible participant-led, the point being to allow their own categories of experience and meaning to shape discussion, rather than the presumptions of the researchers. Even so, the objective was to explore attitudes about nuclear industry developments, so that we followed, albeit flexibly, a common basic format in each case.

After personal introductions and a general explanation of the project, this format involved asking participants to identify concerns and issues in their area, without preordaining a focus on the nuclear industry. The interest in nuclear developments and public feelings was then explained more fully, and three outline scenarios summarising conceivable alternative futures for the nuclear industry in the area were referred to as a means of stimulating responses and discussion. These notional (though coherently based) scenarios appear in condensed form in Annex B of the report. They comprised: Case A - a broadly strong and positive scenario for the UK and West Cumbrian nuclear industry; Case B - a weaker and more pessimistic scenario for the UK and West Cumbrian nuclear industry; Case C - a mixed scenario in which the UK nuclear power generating industry is gradually phased out, but with Sellafield remaining a centre for the management of UK and foreign spent fuel.

Without exception across all the groups, we found people ready to discuss their feelings at length, so the scenarios did not play any central role in directing the agenda. They proved simply a useful heuristic device. The facilitators kept discussion broadly on the topic, posing questions intermittently to reorient it, and to ensure that our overall research agenda had been covered. The researchers also sought to explore perceptions of the relationships between existing activities at Sellafield, and the Nirex radwaste proposals and plans.

Analysis of the focus group transcripts was performed by independent reading by all the research team members, from which they drew up separate lists of main observations and themes arising. These were then shared and debated in several team meetings, at which the wider experience of the researchers in qualitative and quantitative research on risk perceptions, public understanding of science and technology, and public attitudes was also brought to bear. This

controlled interpretative process led to selection and refinement of the main themes and insights, described in the next Chapter.

### 3.4 *CONCLUSION*

The importance of including contextual factors in any articulation of public perceptions of risk has been described in this chapter. The prominence of complex social commitments such as trust and dependency in contemporary risk debates reinforces the need to look further than opinion polls in order to gain an understanding of the shifting and contextual nature of people's 'attitudes' to the nuclear industry. West Cumbria's long-standing industrial and nuclear history, coupled with the complicated and relatively intense socio-economic stresses felt in the area today, contribute to a background of considerable complexity within which the expressed feelings of local people need to be set. In the next chapter we discuss the findings and interpretation of the focus group discussions themselves.

## 4. *HOW LOCAL PEOPLE FEEL*

### 4.1 *INTRODUCTION*

The design and conduct of the focus groups which were the main empirical basis of this study have been described in the previous chapter. Also given above was an explanation of their rationale as method, contrasted with other methods of observing attitudes towards complex concepts such as risk. In this chapter the main findings distilled from analysis of the transcripts of the focus group discussions are discussed. They are organised under eight themes as given below. However it will be apparent that there are many interpenetrations between these linearly organised thematic issues. Thus the texture of these perceptions is more appropriately characterised as cross-woven fabric than as a linear string.

An overall impression from the discussions is that attitudes in West Cumbria towards the nuclear industry are more complex and fluid than previous surveys have tended to imply. One implication of this is that the apparent general support for the industry in the area needs to be interpreted with real caution; it may reflect recognition of dependency rather than more positive endorsement. People in West Cumbria appear to be thoroughly alive to their relative position in the national economy and the wider nuclear debate. What is impressive is how pragmatic they have been so far in the face of the conflicting pressures that result from this.

Even beginning, as the researchers did, with scepticism based upon previous research experience about the validity of separating attitudes into insulated compartments, the extent to which experience in one aspect fed into definitions and judgements in other dimensions was surprising. One of the most important general observations about the attitudes as captured in the focus groups therefore, is the artificiality of treating them as discrete orientations disconnected from other cross-cutting issues and concerns. Such treatment - characteristic of much controversial attitude survey work - drains the full picture of key currents of understanding. Within the constraints of this study an attempt has been made to remain faithful to this complex integration, whilst teasing out themes which suggest practical initiatives, or which challenge and potentially help develop prevailing understanding.

### 4.2 *RESILIENCE AND LOYALTY*

West Cumbria is often described as an isolated and depressed area, overly dependent on one industry which is hazardous and politically controversial. Ample evidence was found that this view was recognised locally, and various aspects of this are analysed below. However to keep this in perspective, it is worth noting the universal recognition of the crucial role of Sellafield in the local economy. Without the jobs provided there, and the multiplier effect locally, the perception was that there would be nothing. As one local put it graphically, 'If the nuclear industry wasn't here, Whitehaven wouldn't be here' [Working Professionals group in Whitehaven; Group 6]. A Keswick resident

echoed this, with the observation, 'without Sellafield, West Cumbria would be dead, and it would have died a long time ago', but a sharp division existed with the rest of the County - 'Keswick, to my mind, is totally different' [Working Professionals group in Keswick; Group 7]

This positive role in providing jobs to a large proportion of the local population also has its negative side in a culture of dependency, as reported below; but it does provide the area with a coherent identity. Whatever the specific positives and negatives associated with this, such as uncertainties about health risks, or the feeling of being the easy option for waste disposal, the very coherence of concerns and identities around the nuclear industry creates a strong sense of social resilience in the face of wider political controversy and uncertainty surrounding Sellafield. This was expressed sometimes as a feeling of pride in carrying a burden of risk for the rest of society (though interestingly this was not extended to an equivalent sense of pride in being a centre of technical excellence and a world technological leader in this aspect of nuclear fuel cycle management). Such pride was accompanied by a sense of toughness and down-to-earth pragmatism borne of a local history of hazardous work such as coal-mining and seafaring, and experience of economic and political marginality.

However, accompanying these positive sentiments there were more negative views - for example, the feeling that the infrastructure of the area fell far short of acceptable standards, and should be improved as a matter of urgency. This negative side of the local sense of identity focused around several related dimensions, of which the neglected infrastructure was only part. There was a feeling of being isolated by inadequate transport and communications, and a sense of injustice and even humiliation at allowing this neglect to accompany being expected to take the nation's nuclear waste. This externally oriented sense of being isolated, neglected and taken for granted was reinforced by a more internally oriented feeling of a lack of variety of opportunity within the locality. Thus the lack of training and higher education opportunities as well as a lack of other kinds of jobs combined with dependency upon one large employer, whatever the specific pros and cons of that employment, to engender a sense of stagnation within the locality as well as neglect and isolation with regard to the rest of the country.

As indicated above, the simmering anger at the neglected state of the local infrastructure emerged as part of a sense of being a community carrying more than its share of hazards and uncertainties. This connected with the sense of stigma discussed below, (section 4.5) at being a subservient population that would not fight in the way other areas had done, to resist being a 'nuclear dustbin' for everyone else's wastes and risks.

In the discussions there was clearly ample recognition of the risks and uncertainties around nuclear power, and of the 'outside' view of the area as downtrodden and dependent. However there were many examples of the sheer resilience of ordinary people confronted with such pressures. Joking was one such general mechanism, as has long been recognised in social research (e.g. Mulkey and Gilbert (1984)).

For example a farmer who used to farm right by the Sellafield site put the uncertainties about leaks and health effects into manageable perspective by observing that the reason he had a big family was that every time there was a leak he had to prove to himself that it had not made him impotent! Another exchange between a fisherman and a farmer about compensation and the 1957 fire is illuminating:

[FISHERMAN] 'Tell me something, You know when you had to throw all that milk away when it got contaminated, did you get paid for that?'

[FARMER] 'Yes, yes. It was just exactly the same amount of gallonage we sent in...'

[FI.] 'Well, on the same scale when our fish were labelled Irish Sea and nobody wanted to buy them, we never got a cent..'

[FA.] 'What did you do with your fish then?'

[FI.] 'But you'd give over catching them. Here, even more important, what did you do with the milk?'

[FA.] 'We poured it down the drain.'

[FI.] 'Went down the drain and then where did it go to?'

[FA.] 'To your fish!'

(general laughter)

[FI.] 'We're only fishermen so it doesn't matter!'

[Farmers and Fishermen in Whitehaven; Group 5].

As one of the same group later remarked, 'We're stuck with the place so we must make the best of it'. This succinctly expressed a typical stoicism, realistic about the risks and uncertainties, about the industry and its capacity for self-delusion as well as for misinforming the public, and about their own lack of power to alter history.

There was a frequently expressed view that Sellafield and its all-encompassing implications - positive and negative - was never far from people's minds, but that it was not much talked-about. This was evidently one way of living with the intrinsic uncertainties. For example in the context of a discussion of recent medical reports about elevated local levels of a rare form of eye cancer, a participant observed:

'Well when you hear about these things that could....There are things in this area that do seem to be a lot more higher than other areas. It obviously does....you just think, well is it to do with that? And obviously you'd say, well yes it obviously is. But on the whole I....all these things happen. I just switch off from them. It isn't that I don't want to, to know that they happen. I just think Oh well, it's been there all the time I've been here and I'm all right so far, as far as I know. And I just go on and take every day as like, as it happens. I don't get despondent and think it shouldn't be here at all. I think if it was shut down it would be the end of this area. So all these different things are....they're all things that you do hear about. I mean, I just don't think all that much about them'. [Farmers and Fishermen in Whitehaven; Group 5].

Thus qualifying the recognition of BNFL's central role was realism in several dimensions, about the physical risks but also about the social actors, power, and the distribution and access to knowledge. It would have been utterly misleading to abstract dimensions of physical risks and economic benefits

from these more complex, multilayered social dimensions in which both were embedded. A later section (section 4.4) elaborates on some of the tacit psychological and social mechanisms such as boundary-construction which seem to have been established in local thinking so as to help bracket-out such potentially threatening uncertainties from everyday existence, to allow normal life to proceed.

#### 4.3 *TRUST, RISK AND DEPENDENCY*

The realism and stoicism already indicated extended to people's views of the nuclear industry, locally identified with BNFL. There was a sense of deep ambivalence about dependency amongst a whole community upon a highly controversial and hazardous industry. Trust, such as it was in the nuclear industry and the government, came across more as a necessary condition for satisfactory existence in the area, than as something authentically felt. As one focus group participant expressed it, 'We have to believe them' [Farmers and Fishermen in Whitehaven; Group 5]. Another exchange was equally telling:

'I think we must trust them, we must trust that they are going to do the safe thing.  
Particularly as quite a lot of people are watching them there, which is a good thing'.  
'Aye.'  
'They're being watched. As long as they're being watched they'll try and do it right, won't they?' [Farmers and Fishermen in Whitehaven; Group 5]

There was a widespread acceptance that BNFL were genuinely trying to get it right, and a fervent wish that they could. But as the quote indicates, this was combined with a deeper implicit anxiety at the contradiction of being 'forced' to trust them.

Interestingly enough, the social actor most often associated with doing the 'regulatory' job for society so that it could 'trust' BNFL, was not a government department, but Greenpeace. Even apprentices recognised they were doing a good and necessary job in this respect, although this was accompanied by the caveat that their tactics were sometimes extreme. The point appears to be however, that this legitimisation of an environmental group in a 'public interest' watchdog role over the nuclear industry, indicates that people see themselves as living within a fundamentally different model of society compared to that assumed in orthodox accounts of risk regulation. In this societal model the traditional centres of authority and public interest, namely government departments and related formal institutions, no longer command adequate public trust and identification, and have had their place taken at least partly by informal institutions such as environmental groups.

These admittedly conjectural observations about the development of a radically different kind of 'public sector' would be consistent with basic changes observed by social analysts in the social and cultural make-up of late-modern society (Beck 1992; Giddens 1990). To see their full implications requires a brief digression on current understanding of risk.

It is now well-accepted in risk research that typical policy debates about risk are too narrowly framed to capture what is at issue, and may thus fail to command public credibility. The Royal Society's 1992 Risk report recognised this fundamental point, endorsing the research insight that the basic currency of risk is not merely the estimation of physical harm (such as likely numbers of deaths), but the basis of trust which the public can have in the institutions that are supposed to be controlling the physical risks. As sociologists such as Giddens (1990) have noted, dependency upon experts of all kinds is pervasive in modern society. Thus trust is a crucial element of the modern social order; yet it is being severely stretched by the contrasts between ever-intensifying hazards and decreasingly bounded risks on the one hand, and expert claims to have everything under control on the other.

Other research has suggested that scientific experts and institutions undermine the basis of public trust by inadvertently patronising public groups and their knowledges. Scientific risk assessments in their nature tend to standardise risk situations and cannot take full account of particular conditions about which ordinary people, workers or others may have specialist knowledge. When this lack of realism is encountered by ordinary people their trust in experts and their institutions may be called into question. Often however, rather than acknowledge these inherent difficulties and negotiate over them, the experts tend to intensify the scientific language and elaborate the risk communication, on the assumption that the public's scepticism is based only on ignorance or misunderstanding. This does not address the central problem; indeed it may make it worse because it denigrates people, thus further encouraging breakdown of trust or identification with those institutions. The one formal local institution supposed to represent public needs, the Sellafield Local Liaison Committee, was never once mentioned in the focus groups. This would seem to indicate its lack of significance in local people's experience, despite the re-vamping which it underwent after criticisms were endorsed by Justice Parker at the 1977 Windscale Inquiry.

However this corrosion of trust may remain invisible at the level of public affairs, because it is not necessarily given public expression, especially if the population feels unavoidably dependent upon those institutions. Tacit dependency may be misinterpreted as if it signified a more positive trust. Thus the underlying problem of public trust can be made worse even when scientists are trying their best to deal openly with the risk issues. Such perverse dynamics are observable in many risk debates. The general conclusion is that risk issues, and risk perceptions, cannot be understood without understanding the context of social and institutional relations in which they arise; this includes historical experience and judgement of past social demeanour as an index of possible future behaviour by the institutions in question. So far, the attempts of formal regulatory bodies such as the Health and Safety Executive (1988, 1992) to respond to public perceptions of nuclear risk have not assimilated this fundamental point. They remain wedded to the assumption that the only legitimate factual framing of risk issues is that of probabilistic risk assessment and related techniques, excluding wider material issues such as institutional demeanour.

In the focus groups there was considerable cynicism and disillusionment expressed about BNFL and its handling of risks, especially in connection with leaks from the plant, even if this was immediately countered by recognition of the inevitability of its existence as the main provider of jobs and identity in the area. An accumulated experience of a long and unfortunate history of accidents, however minor; secrecy and delay in informing people; and yet complete dependence on the company; was the context of public senses of risk:

'I just think it's a shame that it's all here and we depend on it so much...They've got us over a barrel because there's nothing else we can do, I just think it's a shame because there really isn't anything else. Nothing. There's nothing we can do about it.'

'I mean, let's face it, they can't be trusted now with the leaks. I mean, they don't know it all. They don't really know it's going to be safe do they? Really?'

'Everybody has mixed views on it, I mean, like I say, it does bring money into the country, it does create jobs but it's the safety aspect, I mean how much does a child's life cost? I think I'd rather be unemployed, and still have my child, and healthy.....'

'Everybody's so confused and mixed up over this issue' [Mothers group in Seascale; Group 2]

The research overall found attitudes to be much more labile, open to interactive shaping, and ambivalent than could have been revealed in survey methods. It is suggested that the present situation may mark a deep transition from previous times in which, even if there were specific controversies, scientists and their institutions commanded a general propensity for trust from the public at large. The breakdown of this context of readiness to trust has left a vacuum of assurance and legitimation in which people's assumptions of social order no longer hold. Thus there is a fluidity, instability and underlying diffuse anxiety about attitudes that is something fundamentally new, and extremely important. Along with it goes a diffuse, fundamentally social sense of uncertainty that is much more deeply rooted than concern about calculable physical risks alone.

This general, if not immediately evident erosion of basic trust or assurance in modern society and its institutions is likely to have most sharpness and significance in precisely those communities, as in West Cumbria, where there is a long history of dependency on a single dominant and controversial hazardous industry, and one which has par excellence relied upon the image of scientific expertise so as to project itself, yet which has repeatedly been in trouble with its public image and trust.

Amidst this anxious instability and fluidity, the general coping response is to construct boundaries which recreate security and insulation in the face of this threatening experience of fundamental incoherence<sup>94</sup>. As illustrated later, these boundaries can be quite arbitrary or adventitious, for example around an immediate work or residential community. This externalises the insecurity and

uncertainties created by the dissolution of the general context of trust, that is the social risk, but it inevitably does so in forms which are themselves also potentially insecure and thus vulnerable to demolition. Hence community dependency combines with dissolving general social sinews of trust to encourage a sense of stigma and implicit self-denigration; but these unsettling self-perceptions are concealed by the defensive forms of boundary construction and identity maintenance.

The disempowerment involved in this dependency, the subtle self-suppression of open debate about the risks and anxieties, and the feeling of being a 'written off' community that was compliant enough to accept itself as the country's - even the world's - radwaste dump, were all evident in the discussions. As already noted, they appeared to call forth an extreme form of boundary construction which often allowed the bracketing off of evident risks, uncertainties, responsibilities and contradictions. This frequently took a (flexible) spatial form, in which people identified their existence as confined to a small locality which managed to exclude the adjacent threat as 'somewhere else', in another category altogether. Before analysing this we first examine perceptions of the relationship between the Nirex proposals and the major current concern, namely THORP.

#### 4.4 *NIREX AND THORP*

The fact that our fieldwork took place at a time when the newly completed THORP was threatened with not being commissioned, naturally shaped the relative priority of issues on people's minds. THORP, and the threat to local jobs if it did not go ahead, was the central concern to virtually everyone, though not without qualification.

There was considerable confusion about the relationship between BNFL and Nirex, and between THORP and the proposed radwaste repository. Whereas BNFL was recognised as a long-established local company, Nirex was seen as an outsider company that had only finished up in West Cumbria because it had failed to find acceptance anywhere else.

Several people expressed the view that Nirex's proposals would never materialise; others thought them to be inevitable, already going ahead behind the scenes whatever local people might think. There was also scepticism about the number of permanent jobs the Nirex facility would provide even if it was eventually constructed. THORP, on the other hand, was seen as an essential (though presently unnervingly uncertain) source of work in the area, at a time when work was hard to come by:

'For Joe Bloggs on the street who's not got an apprenticeship, not got a trade, he's knackered like... I mean the way I'm looking at it now, I'm saving up now, for once my apprenticeship finishes and I can see myself, if THORP don't go ahead, I won't have a job'. [Apprentices Group 1]

'If THORP does nothing, basically when we come out there's not going to be any jobs for us..' [Apprentices Group 1]

The recollection that the route to working at Sellafield had once seemed so secure seemed at odds with the present insecurity apprentices were now feeling:

'If your reports are...at school, you apply for BNFL, you get in BNFL. I mean when I was at school it was, when we got...they take that many on - junior process apprentices...all go to BNFL. There was never any...shutting down or cutting back. It was security.'[Apprentices Group 1]

The crucial importance for THORP, as compared to Nirex (described by one apprentice as 'just a dream'), to become an employment reality was related to both the timing, and the specific nature, of the apprentices' training:

'You've got to have special skills and training to work on these plants and until you get them you can't go onto this plant.'[Apprentices Group 1]

'I mean, THORP is us. Nirex is sort of after us - it goes there when we're finished with it.'[Apprentices group 1]

As a result of their situation the apprentices felt near outrage and disbelief that THORP might not be commissioned, recalling the investments, in human and in capital terms, that had already gone into the plant. At the same time they envisaged their 'journey' to a secure future working on THORP, which at one time seemed to put them in a fortunate and relatively privileged position in the area, as being wasted, a dead end, and furthermore, unhelpful in their search for other work, since the training they had received that was specific to the nuclear industry, or to THORP, would not enhance their status as electricians in the competition of the wider job market.

The most striking and consistent aspect of people's views towards the Nirex repository was the distance which they were able to construct between their lives in West Cumbria and the waste repository issue. Perhaps associated with this was widespread evidence of acute difficulty in thinking about the long-term future. The sharpest expression of attitudes was over the use of the proposed repository for foreign radioactive waste, which was almost universally criticised, and clearly intensified the sense of local stigma in being seen as a weak and subservient community to be taking 'everyone else's' unwanted nuclear waste.

The Nirex radioactive waste rock characterisation facility proposal was defined as affecting 'somewhere else', namely Gosforth, only five miles from some of the focus groups (in Seascale and Holmrook) and less than fifteen from the others in Whitehaven. A typical interaction was:

'Nobody's going around talking about it though are they?'  
'No, not really. I mean when it first came out you read it in the papers and... but not really no, you don't. I think it's more stronger in Gosforth than here ..'  
[Mothers in Seascale; Group 2]

and;

'I mean there's all them people at Gosforth that's got to live with that'  
 [INT] So it's just the people of Gosforth?'  
 'Well I mean...but I feel more for them because they've got to sit and -  
 They're right on it aren't they?'  
 '. They're still fighting ..yeah, they are, but I mean because we're a step back  
 from it, it's sort of not an issue -'  
 'It's only 28 isn't it from Gosforth?'  
 'But I mean, talking to people...nuclear power....they're not interested'  
 [Mothers in Whitehaven; Group 3]

In some groups this externalisation of Gosforth as the locus of the waste repository issue was reduced to the question of blight on house-sales, some (Mothers in Seascale; Group 1) noting that they had suffered in this way for years without anyone being interested, but now 'a few richer types' were similarly affected at the nice country village of Gosforth, an issue was being made of it. Significantly a complex and abstract future potential risk which was very difficult to bound, was reduced in conversation, to concrete immediate terms like house prices, and the no-doubt equally complex concerns of the people most immediately involved were also reduced to similarly concrete motivations. Yet the very same people doing this reductive interpretation of others' motivations (in this case from Seascale) in the same focus groups themselves expressed far more richly textured, subtle and multidimensional perceptions and concerns.

In other groups also there was a determined sense of insulation from such troubling involvements, often combined with the rationalisation that these were immune to ordinary people's influence anyway. As in other parts of the fieldwork, what appeared at first sight to be purely descriptive statements actually harboured prescriptive hopes and commitments. 'It won't affect me' was a typical descriptive statement, one that could be read as a prescriptive commitment to ensuring that the issue is psychologically, by whatever device, 'fenced off' as separate from the areas of life-involvement and responsibility affecting "me". The respondents at Keswick, in the Lake District National Park but not much more than twenty miles from Sellafield, spoke of the West coast as if it were completely separate from them, and others in the Whitehaven area also defined a strong psychological boundary between the West coast 'strip' and the Lake District National Park altogether. Within these were expressed more refined boundaries, allowing farmers at St. Bees for example to separate themselves and their risks from those a few miles away, nearer Sellafield; and ultimately the defence was retreat behind the secure confines of the farm gate, family or fishing community as repository of solidarity and insulation from whatever threatening uncertainties there may be beyond these artificial boundaries.

This kind of shrinkage of the contours of civic involvement - fortunately, not one which was consistently pursued - could well be attributable partly to the effects of economic recession, and it would have been useful to have been able to compare with other areas. Constructs of responsibility and agency are an important general substrate of the more direct attitudes and beliefs about the industry, its risks and benefits in West Cumbria, and are discussed below.

Given the prominence in general public debate of the long-term risks and challenges of radwaste disposal, it is surprising at first to find such a striking inability to articulate long-term perspectives, in all the groups. The nearest approaches to these were probably the concerns of mothers about their children's future - otherwise discussions turned almost exclusively on immediate and past questions. This apparent difficulty in articulating interest in longer-term perspectives seems to be consistent with the analysis suggested here concerning the defensive retrenchment of people's horizons of identification and moral responsibility, into more localised and 'secure' terrains of various kinds, in the face of a sense of mistrust and anxiety about wider social uncertainties.

In general it can be concluded that the Nirex plans and, possible waste repository developments are secondary in most people's minds to THORP and related immediate developments. Although Nirex and the repository are thought of as rather vague and distant, in time and space, they do evoke stronger feelings concerning the perceptions of importing foreign waste and 'being a nuclear dustbin for others'; and with this in mind perhaps they do also evoke stronger feelings about the right to drive a harder bargain for improvements in the general infrastructure, communications and 'standing' of West Cumbria.

#### 4.5 *DEPENDENCY*

The dominance of the nuclear industry, mainly BNFL, as the provider of jobs is so deep as to evoke the feeling that without it there would be no local community at all. Not only many jobs, but good training, pay and conditions were recognised to be available at BNFL, and this recognition extended beyond its immediate vicinity as the Keswick focus groups showed. Furthermore it was acknowledged that many other local social facilities and events would be unviable without company sponsorship. This being said, there was nevertheless a sense of unease at this comprehensive dependency on the nuclear industry, not just for jobs, but as the provider of social existence and identity. This is a negative side of BNFL's active attempts over the last decade or so to support many community activities as part of its public relations programme; this generosity, though recognised, also brought the contrary feeling of encroachment, that it risked leaving few areas of personal and social experience not coloured by the intervention of the company.

People combined a sense of fatalism about the situation with indications of guilt and even shame at being a 'community' which allowed itself to be dictated to so comprehensively, not just by the nuclear industry but by outside forces more generally. Thus a number of respondents expressed the conviction that the only reason the Nirex proposal had ended up in West Cumbria was because it had tried almost everywhere else in the country and been rejected, but that the local population was too subservient and browbeaten to do likewise.

'We are bearing the burden of nuclear for the rest of the country, and even to some extent for the rest of the world. And there's that sense - I have that

sense anyway - that we are being... and the reason why Nirex came here is because it was clearly the easy option. I mean, in that it had been rejected in other parts of the country..'

'It would have made a difference if they hadn't actually toured the country, this sort of caravan being chucked out of their [site] in Lincolnshire, and [in Humberside, Teesside, and Essex]. It was chucked out.....It ended up here because nobody else wanted it.' [Working Professionals in Whitehaven; Group 6]

'It's the softest option....they were thrown out of other parts of the country, oh yes!' [Working Professionals in Whitehaven; group 6]

This widely expressed feeling of being a subservient and somewhat marginal population induced a sense of stigma attaching to West Cumbria. This was evident from the number of references to the views of outsiders, who respondents reported as finding it difficult to understand why locals accepted living with such an unacceptable and pervasive risk:

'Well I think you know, when they haven't lived here, I mean I think the views of other people coming in - I mean even if you go away on holiday and things like that and they ask you where you live, and as soon as you mention Sellafield , you know, there's a big reaction.... as if you glow in the dark or something like that., you know, or you've got two heads or something.'  
[Mothers' group in Seascale, Group 1].

West Cumbrians evidently saw their area as 'different' and separate from the rest of society. This was expressed often as physical isolation and lack of communication with the rest of the Lake District even, let alone the rest of the country, and especially about the 'run-down and decrepit' appearance of the area, and about the lack of roads and mobility from the Sellafield vicinity.

The sense of dependency seemed to extend to a feeling of being tied to the place, no matter what. This feeling appeared to be markedly differentiated, broadly according to social class. For example middle class respondents on the whole appeared to feel inhibited from expressing opposition to the nuclear industry even when they were critical of it, because they defined themselves as free in principle to move away if they thought living around Sellafield was unacceptable, and indeed some of them had chosen to live in the area. Thus they seemed to feel disqualified from outright opposition to expansion, and their critical attitudes were 'privatised' into a discourse of (in theory at least) personal choice, rather than community interaction.

More working class people on the other hand tended to indicate much less sense of mobility or choice generally; they appeared to conceive of their lives as completely wedded to the locality. Consistent with this sense of lack of choice and control, they also gave a vivid portrayal of a life increasingly controlled by the alien and capricious logics of many 'outside' agents, of which the nuclear industry was only one - EC bureaucrats, safety regulators, planners, harbour authorities (fishermen), customers and middlemen organised on a large-scale, landlords, and 'offcomers'. This sense of a lack of power to influence, which working class respondents showed, may have issued in a greater feeling of dependency and fatalism about the nuclear industry and its local development; but at the same time, when critical

attitudes were held, (which was not universal), this same sense of lack of power engendered more intense and forthright expressions of hostility and mistrust. They were not qualified in the way the middle class critical stances were, by the inhibitions brought about by feelings of greater personal choice, agency and mobility.

Criticism of BNFL most often centred on past secrecy, and the manifest contradiction between claims of control and continual leaks and incidents, whose scale was beside the point. Thus BNFL laments about public 'exaggeration' of small leaks showed them to misunderstand the basis of public concerns in this domain. At the time of discovery it might be unknown how significant a leak is. People showed acute awareness of the point that the industry announced leaks only after significant delays, by which time they felt deceived; the argument that the industry wished to get the incidents under control before announcing them did not allay these feelings; indeed it seemed sometimes to exacerbate them, because in the interim period of 'cover-up' people felt denied their right to take precautionary action if they wished to.

'I mean, we don't get the facts like do we till...till three or four months later or something, and they disclose that they've had this big leak and -'

'I couldn't believe that [referring to leak at Sellafield whilst local MP was visiting, and he wasn't told] and I read that in the paper... I mean it was just typical, I just laughed, I thought oh, here we go again, leak, you know. I don't really take a lot of notice because I think you know, it's always the same isn't it? It's always-'

'But they should tell people when it happens. They shouldn't keep it to themselves. But even when it does happen, you know, it's always, er-'

'They never tell the truth..' [Mothers in Whitehaven; Group 3]

'They do [hold public meetings], but I don't think people are really interested. I think they do have them but not a lot of people go.'

'No... and do you not think it's like before... in the 1980s when it was all cloak and dagger and they wouldn't answer your questions and now they're realising that people do want answers, sort of sitting there, you know....'

'Well let's be honest, when you do go you keep thinking, is this a cover-up?'

'That's right.' [Mothers in Seascale; Group 2]

A later section (4.9) discusses the dilemmas of public information as seen from the focus groups, in the context of an extremely complex, demanding and hazardous science-intensive industry.

#### 4.6 *THE NATURE OF SUPPORT - LEVELS OF IDENTIFICATION AND UNDERSTANDING*

The usual representation of opposition to nuclear power is that it is based on ignorance. Support is correspondingly represented as based on superior understanding, which leads to 'active' espousal of the industry and its arguments. In the political geography of support and opposition, this frequently translates into the familiar world view that 'we locals' know the technology, its risks, rules and practices better, hence have learned acceptance of it, whilst those from 'away' exaggerate the risks because they are ignorant.

We found a far more complex set of conflicting beliefs and tendencies than this. The rhetoric of 'locals know best' was naturally evident, but even the very same people who expressed such a view combined it with qualifications and contradictions.

Firstly we found little evidence for the claim that local people know significantly more about the nuclear industry, reprocessing, THORP or Nirex than the wider population. Indeed there was ample evidence of confusion, ignorance and lack of confidence on the part of local people about the industry, its organisation, plans and practices. One apprentice at BNFL gave the usual lament about public opposition to THORP being based on rank ignorance, observing on its relative risks that "there's more radiation in farts"; but he then proceeded to confuse various aspects of Sellafield's role in producing waste and even plutonium. This contradiction between assertions that Sellafield was misunderstood by its opponents, who were mainly from away, and elementary local misunderstanding, was striking. Another apprentice at BNFL expressed ignorance about Nirex:

'I'd prefer it if it wasn't there, but it's got to be somewhere I suppose. A lot of people don't know much about it, there should be a lot more public announcements. We work at Sellafield and we haven't been told anything about it. We don't know what it is really.' [Apprentices (3)]

Then about THORP:

'I didn't even know there were problems with it opening until I heard it on the news, and then a day or so after [that] it was all around.' [Apprentices (3)]

'My ex-boyfriend, he worked on it for years, but I still, and he wouldn't know what it was about neither.' [Mothers in Whitehaven; Group 3].

'I don't really know a lot about it. I just know it's a new building that a lot of money's been spent on..'

'It's supposed to be, I don't know. A lot more safer.'

'A lot more complex isn't it? I don't know really.'

[INT] 'What d' you think?'

'I haven't heard much about it. I know it's there and that's about it

I don't know, just I thought Thorp was the thing that they were going to do down in Gosforth. I was a bit naive. I thought that was all part of the same thing, obviously not.' [Mothers in Whitehaven; Group 4].

There was also a very strong focus of identification only on the immediate provider of a job, namely THORP. The apprentices were not only ignorant about the Nirex proposals, but they thought them irrelevant, and unlikely to materialise. However identification with THORP was not necessarily a well-informed identification, even amongst those who worked on it. Their interest was confined to its provision of a job. Thus there was little evidence of a well-informed, active espousal of the arguments in favour of nuclear power; indeed the apprentices detached their immediate priority interest in THORP opening from any further commitments.

[INT] 'What's the feeling amongst your sort of mates and so on about nuclear power?'

'I don't know. I think they're very short-sighted because of the...you don't, you're not thinking on a big grand scale like oh, I wonder, your topic of the day is not, hang on, I wonder if nuclear power is going to take off..'  
'It's more sort of, are we going to have a job at the end of our apprenticeships isn't it?'  
'Everyone's talking, like is THORP going to go ahead, not is nuclear power going to take off. Even if nuclear power does take off it's not going to help us really, if THORP doesn't.' [Apprentices (1)]

Such restricted interests and understandings are understandable in the light of the extreme economic dependency of the whole area upon BNFL; but this very dependency induced a strong sense of fatalism and apathy surrounding the whole situation, amplifying yet further the self-criticism and sense of stigma indicated before.

In general even people who supported expansion of the industry could not express high levels of trust for the authorities; it was mainly a purely instrumental and realistic recognition of the need for jobs, and did not signify any more positive identification. Indeed it was often coloured with qualifications about the total co-option felt by some in the face of a large monopoly employer and locally dominant cultural patron.

'We're all starting to say, well enough is enough.....you know, just because we work for you doesn't mean to say you rule us outside the gates.' [Mothers in Seascale; Group 2]

Nevertheless, much the more common stance was less assertive than this. Indeed there was a widespread sense of fatalism, lack of power to influence things, and a corresponding contraction (in 'social space' and in time) of horizons of responsibility.

#### 4.7 *AGENCY, RESPONSIBILITY AND DENIAL*

One of the most widely recognised phenomena in risk perceptions research is that of subconscious denial, whereby individuals or communities exposed to chronic risks suppress their explicit recognition of the unsatisfactory situation with which they are faced<sup>95</sup>. This is understandable, and is necessary to help subdue what would otherwise be unsettling psychological disruptions to daily life.

There was recognition of the risks involved in living in the vicinity of Sellafield, but this recognition was often covered, or mellowed, by layers of rationalisation. The most forthright expressions of concern about risks came from mothers of young children, even though they recognised the contradictory dictates of economic existence and safety. There appeared to be a deep longing for the company to actually manage at last to control its leaks and enjoy an unblemished existence. In this sense there was an underlying quite resilient feeling of loyalty to BNFL, even though it was sometimes simultaneously lampooned as secretive and incompetent. THORP was woven into these perspectives in contradictory ways. On the one hand was the hope and expectation that being a new, integrated state of the art

technology, it would - or as was also expressed, 'should' [Mothers in Whitehaven; Group 4] - be cleaner and safer than the old plant on the site. On the other hand was the view that as a new technology, THORP was untried, and so might be just as vulnerable if not more so, to human factor failures. Likewise the deep repository proposal was seen sometimes as an irreversible risk due to loss of control of the radioactive wastes, sometimes as the best way of avoiding possible accidents or leaks due to human error if it remained under surface management. The latter seemed to place faith in nature to contain the risks, the former, in society.

Surrounding these specific attitudes however, were indications that people felt so disenfranchised by the uncertainties over risks, safety, and sources of authority or reassurance, that these views were unstable, not openly shared and debated, and highly dependent on other factors. The most basic element was a sense of retreat into a very localised world of highly restricted trust and agency. In relation to the topical question of Krypton-85 emission controls on THORP, for example, ignorance, impotence and mistrust converged:

'You don't know if they're getting the go-ahead for ...because...through --  
It makes you wonder though doesn't it?'

'Yeah'

'Because sometimes, what goes on behind closed doors....you don't know what effect it is going to have on you. I mean everybody says, it's not going to have any effect on you, well, BNFL says it won't, but you don't know, because you don't know anything about that kind of thing.....'

'Can you really say...who we can trust? ....There isn't really anybody you can trust..' [Mothers in Seascale; Group 2]

Frequently in the focus groups, there was evidence that people's expressed 'freely-chosen' view was being shaped by what they saw as inevitable. For example:

'I'm not against it, because if it's going to happen it's going to happen, you know. I don't like when folks say, oh you know, aren't you frightened living here? I'm not going to flee, run away, go and live somewhere else. This is home, so, if it's going to happen it's going to happen. I'm not against it. I'm not particularly happy it's there, but if it's not here it's just going to be somewhere else isn't it? It's going to happen, so.....' [Mothers in Whitehaven; Group 4]

This seems to reflect tacit adaptation of the person's hopes and values to a realistic appraisal of her powerlessness. Yet the lack of agency this exposes is concealed in its representation as (freely) chosen personal values. Thus asking people what they want or prefer is always likely to be distorted by their tacit beliefs about power and what is possible.

In general there was a pervasive feeling of powerlessness, and an associated lack of confidence. Horizons of aspiration and responsibility seemed correspondingly limited:

'Yeah, but they'll probably go ahead whatever we say...we know we're going to be beat so what's --'

'Yeah'

'...Everybody's got to sit back and accept it... If you want to get away from it the only way is to pack your bags and move.'  
'If we think that badly about it we should be moving'  
[Farmers in Keswick; Group 8]

'It's going to go ahead no matter what we say.....we know for a fact it's going to go ahead in this country...'  
'You know that it will all happen...'  
'It is going to happen, yeah.' [Mothers in Seascale; Group 2]

'I honestly think that THORP's already been given the go-ahead....I just feel this is what's going to happen.' [ Mothers in Seascale; Group 2]

'I mean, THORP's supposed to be coming, well it will come, it's just a matter of....it's just a bit of shouting about and then they'll be here. And then the Nirex....'  
'everything's always sort of, oh yeah, everything's OK. It's all sort of ...whatever happens, everything eventually gets passed..'  
'The boreholes they're drilling now, yeah, I mean, nobody....I think they've got to do haven't they? The thing is though, because you hear about it all the time, you do tend to....you know, when you talk to somebody from away about this, they are really, you know, oh, how do you...! you know, but I think it's because we hear about it all the time, you don't -'  
'You're brought up with it aren't you?'[Mothers in Whitehaven; Group 3]

The suggestion in this last quote is that the [female] respondent is tentatively identifying being a local resident and thus having familiarity with Sellafield, with acceptance of it. (The reference to a questioning outsider reinforces this). This is combined with fatalism about Sellafield's development, and yet some anxiety about its risks. Elsewhere the same fatalism also rationalises deliberate ignorance as an expression of lessened responsibility for all these confusing, worrying and disorienting experiences:

'We're going to have the facilities to accommodate everybody's waste, not just our own.....they're coming from all over aren't they. Is it any wonder that we don't read too much into it, to think what's going to happen!? .....because I think it's because you feel that helpless and hopeless that you just think, oh, I don't want to know, I don't want to know. I tend to be like that, because I think the more you know, the more..... -- that maybe sounds a bit silly, but...'[Mothers in Whitehaven; Group 3]

'I don't know honestly, as I say I have my head in the sand when it comes to Sellafield. Until some big issue comes up and then I have my two penn'orth which doesn't do any good anyway..' [Mothers in Whitehaven; Group 3]

'It's like, putting your head in the sand but erm... it's too near home for me, I think, it's just too near home to even....I think you'd do your head in because we have to live here and ...this is my way of handling it, I just, don't tend to think about it..' [Mothers in Whitehaven; Group 3]

A similar kind of denial extended across a wider front. For example, accepting responsibility for Sellafield's central role in plutonium production and nuclear weapons was resisted several times by direct denial of any such connection. This was just one extreme aspect of a more comprehensive syndrome explicable as a function of a community coping with a difficult combination

of pressures: considerable hazards; multiplying uncertainties and risks of a wider kind; economic and social dependency over immediate livelihoods; a sense of being stigmatised as not only a hazardous area, but subservient, by the rest of society; and disorientation about where it might turn for reliable support and affirmation.

#### 4.8 *RELATIONAL CONSTRUCTION OF BELIEFS*

One of the most deeply-engrained assumptions in conventional approaches to public attitudes is that they are intrinsic to the individual respondent being questioned. Whether attitudes, beliefs or opinions are the object of interest, surveys assume that these exist objectively in the individual respondent and can thus be objectively measured.

Yet the transcript of a group discussion usually lasting between one and two hours shows how the questions which are clinically separated in questionnaire design, and precisely defined for individual responses that can be aggregated, actually interconnect and cross-define one-another. One of the most frequent and consistent properties of such discussions is that attitudes and beliefs on complex matters such as those of interest here, are beset with ambivalence, internal contradictions and inconsistencies. What is more, based upon a more thorough sociological understanding, it is argued that such contradictions and inconsistencies are, paradoxically, to be seen as reasonable. Attitude survey work tends to treat such contradictions as signs of weakness or incapacity, and indeed often overlooks such data. The concept of attitude and belief as constructed in the conventional survey approaches is fundamentally misleading. This is because the object of the question, for example the attitude of a respondent about risk, presupposes that everybody so questioned shares the same, supposedly objective meaning of the term, risk.

Yet as much research has shown<sup>96</sup>, and as the focus groups also indicated, such meanings are objectively open to negotiation, and attitudes or values associated with them likewise betray shifts, ambivalence, and openness to negotiation with others. That is, people's responses to questions about such significant issues as 'risks' (or 'benefits' or 'environments' or 'communities' etc..) are not expressions of a complete and pre-existent position, intrinsic to the respondent as an atomistic, separate, sovereign individual. They are radically incomplete, and chronically open to (re)negotiation in relationship with others. This general insight has major implications for the way in which the quality of community interactions is recognised and treated in such issues. Such interactions are not just a neutral medium through which preferences and values are expressed, but are themselves a substantive part of the formation of values; they themselves have moral and social 'weight', as ends and not just means.

This crucial point is evident in the transcripts of the focus groups, in a way that is preempted in the very method of questionnaire survey approaches (especially using closed questions as is usually necessary for quantitative results). For example a typical progression of group discussion [Mothers in Seascale; Group 2] runs from safety and the ability of 'the experts' to identify

levels of risk, to the relative sovereignty of 'experts' or political-economic interests in deciding whether a nuclear plant like THORP is allowed to run, to the (perceived lack of) democratic accountability of political elites, to economic determinism (I don't think they can afford not to open it [THORP] to be quite honest') [Mothers in Seascale; Group 2] to future possible orders, then:

[A]'Its so complicated, you just can't answer it straightaway. I mean you were talking about plute [plutonium] bombs before and I mean we all know the cold war, you know, the Russians are talking now, the...Yugoslavia, you know, they don't need the weapons like they used to. Plus the fact that we've got America's Trident missiles and everything. It's such a complicated issue, you can't just say, well...'

[B]'You could go on for ever more couldn't you?'

[A] 'Yeah, we could sit here all day and we still wouldn't come to a conclusion'

[C] 'What about that ....it might be that other energy sources take over, like you know, they might open the pits again, or they might discover a way of using solar power, or they might..'

[B] 'I don't think they --'

[D] 'I can't ever see that happening..'

[B] 'Plus they're not on as big a scale I don't think, I mean as you say, if nuclear power gets the go-ahead to open up in new areas, it's such a big expanding field isn't it?'

[A] 'It's all politics as well. Why do they want miners got rid of? Why?'

[Mothers in Seascale; Group 2]

Not only does this typical kind of interaction illustrate the inseparably tangled nature of the issues. It also indicates the way in which stances are developed and defined interactively, in relation to the responses of others. This often exposes ambivalences and contradiction, but these should be seen less as weaknesses or lapses from rational maturity, so much as authentic expression of conflicts and multivalency in the issues themselves, and people's experience of them.

Thus similar to the exchange quoted above, many of the responses show statements tailing off, being left almost deliberately it would seem, hanging 'in mid air', available for someone else to develop further, in collaborative mode. (See for example Mothers in Seascale; Group 2)

One such interchange collectively expressed the endless dilemma of stigma at being a 'dustbin', versus jobs;

[A] 'I feel that more of these nuclear power stations are going to be sprouting up all over. I mean we've got a few now in Britain including....They're going to be sprouting up all over - I really feel in the near future, I mean you are looking in the future, it is going to become a nuclear dumping ground for the rest of the world.'

[INT] 'How? I don't follow exactly how you see that happening.'

[A] 'Well, it's just erm...it's expanding such as Sellafield's expanding now. I just feel this is going to happen.....shifting all the waste over here now, and they're reprocessing it now..'

[INT]'What about you Barbara? that was quite close to your initial reaction as well..'

[B] 'I feel that we're already - that anyway - we've got everyone else's - I mean the Japanese are supposed to be starting aren't they?'

[A] 'I mean if THORP goes ahead they're going to bring a lot more into the country aren't they?'

[C] 'I don't know. The Japanese are talking about reprocessing their own waste... so are the Germans...the French are already doing it ....the French are already dumping into the Channel. Nobody [goes on] about them though do they? You know, I mean Guernsey, they're [sounding off] about it because they're right beside it.'

[A] 'They're talking about bringing it here though aren't they? Nobody knows though ... at least we don't.'

[C] 'It's just in the wind at the moment'

[INT] 'There are two things you're saying here - on the one hand this means jobs, yeah, therefore good; and on the other hand it might mean that ....we might have more stations [like Sellafield] in other parts of Britain as well?'

[C] 'In other words Britain's going to become the dumping ground for the rest of the world ...isn't it?'

[A] 'I think we already are....'

[C] 'Getting that way aren't we? We're heading that way, that's what it's going to be in the future, I can sum that up in one.'

[INT] 'What about other people?'

[D] 'Well, I can see that we're being used obviously. I mean on the other hand you've got to think of....'

[C] 'Work for the area isn't it?'

[D] 'Jobs, yeah'

[C] 'But what's the use of a job if you're dead?'

[A] 'I know. And then on the other hand if it don't go ahead we don't have a life anyway because there's nothing here, so...'

[C] 'What's the point of being alive?...If you're depressed and unemployed and ...on the scrap heap'

[A] 'The odd ones'll have jobs but most people would have to leave the area and you can't really leave the area because there's no jobs anywhere else anyway, so... you wouldn't sell your house anyway, you'd be stuck...'

[C] 'Looking down the country we're not so bad compared with some of the others...'

[A] 'But we wouldn't sell the houses and that'd be it. If they didn't go ahead we'd be stuck in the houses we're in...'

[C] '....Still stuck...'

[Mothers in Seascale; Group 2]<sup>97</sup>

Here we can see two individuals one, A, initially more negative about expansion because of the 'dump' stigma, and one, C, initially more positive, shift their positions in interaction, as the balance of considerations develops through the interaction. Their 'final' positions are not necessarily altered by the exchange; but what it shows is that the very notion of a 'final' coherent position may itself not do justice to the open-endedness of either's view, and may obscure the essential continuity between an 'attitude' and the social relations within which it is constituted. This was a recurrent factor in the focus group fieldwork.

Interestingly enough, there were suggestions of gender differences on this relational aspect, with women showing themselves typically to be more fluent than men in expressing the conflicts and ambivalence that they experienced with respect to living near Sellafield; the men tended more to take a position one way or the other, and then work hard to rationalise it, by eradicating

contradiction. This was hinted at for example in the occasional profusion of clichés, and difficulty in acknowledging uncomfortable aspects of life in this area. Our sample was too small on this as on other questions to be conclusive, but it would be consistent with McGill's (1987) study in the same area, and with other work on gender differences concerning control and ambivalence<sup>98</sup>.

#### 4.9 INFORMATION DILEMMAS

As already noted (section 4.5), the most consistent and vigorous dissatisfactions with BNFL centred on its perceived inability to control radioactive leaks, combined with the deep sense of deceit which people felt when public announcements were always subject to delay. Perhaps the most significant effect of these problems was that they were felt to rob people of whatever little sense of power they had in a situation where they inevitably have to rely on the experts. Thus for example mothers objected to being denied the choice of bringing their children indoors, or keeping them off the beaches temporarily, when a leak might have occurred, but with a delay in announcing it:

'I think these leakages were getting...found out about it second-hand. You know, a lot later - there was one I'm thinking about a month ago that was particularly bad - there was no warning siren or nothing... I was very annoyed when I found out about it. What was it? A few week later on the news? How bad it really was?'

'It was just a few weeks ago wasn't it? It was actually emission through the air, and it was really bad weather on the Saturday when it happened but Sunday was really nice and guess where Suzie was - in the garden.'

'I was really cross about that..'

'You just don't know which way to.....or anything do you?'[Mothers in Seascale; Group 2]

The normal - and understandable - company response that the leak was insignificant and did not warrant such actions, is beside the point, because it still presupposes the right to control those mothers when their exercise of freedoms, relevant or not in practice, would have been at the very least utterly innocuous to anyone. And as some noted, these interim periods between discovery of some leak and its public notification are precisely the time when no-one may know just how big the incident is, so hindsight assertions about their insignificance for public health are of limited relevance to this point.

Local people seem to feel excluded and disenfranchised. They have a keen sense of this secrecy which still, in their experience, prevailed at Sellafield:

'There's that many things not told to the public, you cannot possibly know for sure what's going on.'

'Yeah, yeah you don't really know. They tell you the bits you want to hear..'

'I think there's a lot more leaks into the atmosphere than they will care to admit...'

'.. And sometimes when you get to know, it hasn't been a case of, like, it happened yesterday..'

'It was like ten months ago.'

'It could have been maybe a couple of months back - you know, why -'

'... had a big discussion and meetings and discussed it and then, oh, we'll tell them this and this, they probably miss out...' [Mothers in Whitehaven; Group 4].

Even when the company was communicating, some people still felt it was it was not oriented to them, implying that the company was also anxious about the polarised wider context of the debate:

'You usually get a spokesman from Sellafield on the TV talking sort of six miles above everybody's head.' [Mothers in Whitehaven; Group 4].

A further aspect of this same issue was the public experience of changes in official information, without any prior acknowledgement of the uncertainties in the earlier statements. These experiences of apparent inconsistencies in information reinforced a sense of mistrust in the information provided, and of the motives of the company in giving it (See quotes above and section 4.5):

[A] 'You've got to trust them to some extent, haven't you? They've got the interests of the area in -'

[B] 'They're all as bad as each other. They're all out for what they can get.... They tell you what they want you to know, just like the rest of them really...'

[A] 'And that's all parties, that' not just...' [Mothers in Whitehaven; Group 4]

'There's definitely a lot of cover up, isn't there?' [Mothers in Seascale; Group 2].

However such negative experiences and attitudes have to be placed in context. One dilemma for BNFL and the authorities is that as several people effectively admitted, they want full and uncensored information, yet they do not want to be scared by it. It is also recognised in studies of information in organisations and other social contexts including risk situations, that people are capable at the same time of complaining of inadequate information, yet still ignoring it when it is available<sup>99</sup>. Furthermore the sense that BNFL were always likely to give their own party line was accompanied by an implicit recognition that this is common practice. Thus a sneaking legitimacy was granted to this self-serving aspect of BNFL's information practices, at the same time that they were criticised as being inadequate. This was where a key role was granted to pressure groups, or other independent bodies to extract information that BNFL would be expected to conceal or background. Not that those others would be any more trusted than BNFL to provide, or to possess, full and open information.

Furthermore there was some indirect recognition that BNFL were in a truly difficult situation with respect to information, in that if they issued immediate announcements about leaks for example, they would inevitably have to modify early statements as further understanding came in about the leak, thus leading to apparent inconsistency. This is indeed one of the main reasons such companies typically attempt first to gain definitive information on the scale and implications of such incidents before going public. Of course, this is sometimes extended unnecessarily, and there may be an exaggerated attempt

to contain the incident first, so that it can be more reassuringly put that the event is under control; but whatever miscalculations may or may not be made, these considerations represent genuine dilemmas surrounding information and a sense of public disenfranchisement. As indicated above, this disenfranchisement prevails not only with respect to overt information alone, but over a sense of practical social agency or control.

Perhaps the most important general observation to be made about the information issue is the lively sense of reflective self-awareness of their own position in relation to BNFL and other relevant actors that people showed. This is in itself a potentially important resource of maturity, resilience and realism that can be built upon for future improvements, without naively expecting that some of the intrinsic dilemmas can ever be completely resolved. If the suggestions made about the relational construction of attitudes (section 4.8) are correct, then the social relations underlying these inevitable tensions over public information may be more important than specific tactics and technicalities.

#### *4.10 CONCLUSIONS*

The foregoing account is the researchers' interpretation drawn from the focus group discussions (but measured against, and informed also by, wider state-of-the-art research understanding) of some of the most important themes in current public attitudes about the nuclear industry in West Cumbria.

As already noted, these should not be seen as a representative sample of public attitudes or opinion. The main point is not specific contents so much as the underlying nature of attitudes about the industry and its risks and benefits. In addition to emphasising the strongly interwoven nature of attitudes, the fieldwork showed that specific attitudes about say, environmental risks, could not be divorced from wider social-contextual experiences and judgements. Risk was in that important sense a social concept, tied up substantively in the concrete nature of social relations such as dependency, the historical isolation of West Cumbria, and the feeling of being unfairly neglected and 'dumped upon' by the rest of the country, yet powerless to change this.

Although this analysis necessarily involves abstract ideas, there are several practical implications to be drawn from it. Overall conclusions of both a conceptual and a more practical kind are provided in the next chapter.

## 5. *CONCLUSIONS*

### 5.1 *INTRODUCTION*

Previous attempts to identify the shape of public feelings in planning and development matters have used conventional quantitative survey methods attitudes or opinions, combined with the normal array of consultation procedures and representative debate. Although the former have a valid role to play, they tend to be most reliable when the questions at issue are relatively clear, uniformly recognisable, and simple. The latter are taken for granted as a basic democratic means of airing representative public questions and views about development projects.

The case of the nuclear industry and West Cumbria may be one of the more acute examples of inhibition of public debate, brought about by particular cultural and historical conditions. In particular, these are a high level of local dependency, and an industry beset with controversy, which means that public positions on the matter - from whichever side - are often defensive and shaped in anticipation of criticism. The nuclear issue is nowhere a simple issue about which simple questions can be posed. But in West Cumbria it is even more complex than usual because of the twin conditions, of dependency, and of controversy weighted with outside voices in a way which pincers the local community in a difficult bind.

In these conditions political representatives are to be heard responding at the level of wider conflict in ways which tend unwittingly to devalue and radically oversimplify local sentiments in all their rich complexity. In addition, those surveys of local attitudes to the industry which have been conducted in the recent past, have not been able to get beyond one-dimensional and discrete attitudes about apparently clear-cut questions.

The qualitative, in-depth focus group methods of the present study have provided a crucial extra dimension of insight, not to usurp but to supplement and extend the existing processes. This method has allowed the research, in effect, to test the solidity, structure and meaning of attitudes behind the different kinds of conventional public expression.

The most general finding of this fieldwork is that the basic nature of attitudes is radically more complex, more richly-textured and less solid than normal survey methods can reveal. The research indicates a degree of interconnectedness and interdependency amongst the individual's 'attitudes' as these are extracted in surveys. Such 'attitudes' are also fundamentally open towards their complete expression in relation with others. This is manifested most clearly in a typically high level of ambivalence and 'instability' in the attitudes expressed in the focus groups. Such insights point to the need systematically to go beyond opinion and attitude surveys as putative measures of the state of public feelings, in public consultation exercises on important planning and policy matters of this kind.

It was found that what are conventionally defined as distinct aspects of the issue, such as risks, or jobs, infrastructure, or public information, are so

deeply intertwined with other agenda that it is misleading, and even unwittingly provocative, to treat them as discrete objective aspects on which separate, objectively measurable attitudes exist. This corresponds with the tendency to throw an unduly narrow and one-dimensional frame around the public issues, and ignores many interacting dimensions of legitimate public concern.

The reality is (as the research confirms) that risk as an issue cannot be distinguished from concerns about social dependency, institutional trustworthiness and track-record, and about one's own position (as individual or community) in wider society.

The specific issues of Sellafield and the nuclear industry (though not specifically Nirex) are so central as to make up a large element of social identity in the area. The practical issues of how to understand expressions of support for, or opposition or indifference to local nuclear industry developments, how to inform people, how to relate to the community at large, can only be addressed from the vantage of the more textured account of the underlying nature of attitudes that our research has indicated. This has been small-scale deliberately so as to be able to explore feelings and beliefs in greater depth, and does not claim full representativeness as might be claimed from statistically representative sampling.

Thus the extent of ambivalence revealed, not just about accepting the industry's huge positive local impact whilst recognising its dangers, but further, about accepting such all-encompassing dependency, inevitable disenfranchisement, and an element of stigma in relation to the rest of the country, are important findings in themselves. So too are the complex attitudes and experiences around the dilemmas of information, control, and public trust. It is also important to stress that the conditions represented here are better seen as inherent dilemmas than as shortcomings. Thus for example the element of self-deprecation that we found in the groups, at being the only place in Britain prepared to accept nuclear waste, was mitigated by a countervailing sense of pride. In general, people had a lively reflexive sense of their relationship to the wider society, and this is significant in a further way discussed below.

## 5.2 *AGENCY, CHOICE AND RESPONSIBILITY*

Another important finding was the clear difference regarding a broad sense of choice over life (including risks and uncertainties of life in West Cumbria), between the more middle class and the more working class participants. This is often referred to as a greater sense of social agency, or power to influence, on the part of the former. As already discussed, not only were middle class participants generally somewhat more relaxed about acknowledged hazards and shortcomings, but their world view of choice tended to blunt any critical view from sharpening into unbridled opposition. This was because for this social stratum there was always the option of moving away if it was seen to be so bad; and this perception limited middle class critics of the industry from outright opposition. Here again was indicated a social-relational basis of expressed attitudes, it being implied that to have exercised the opposition

option rather than using the choice to move away, would have been to undermine the livelihoods and social existences of those who had less choice and who thus depended on Sellafield for a job.

There may be important practical initiatives to be derived from these observations, for example about enhancing the sense of choice or agency, and of information-enfranchisement, amongst the more working class social sector. For example much of the discussion of being stuck centred on housing blight (whether 'real' or 'perceived'); thus if a scheme existed to buy the houses at full price of those who wished to leave, people would feel less 'stuck' come what may. Even if the offer was hardly ever taken up, its very existence could markedly and positively alter the climate of feeling about choice generally. Similar initiatives may be valuable in respect of information, to enhance a sense of enfranchisement and access from those who do not share the management's social world views. It is significant that the Sellafield Local Liaison Committee, in theory the relevant institutional mechanism, was never mentioned at all in any of our focus group sessions. Evidently, more elaborated, better socially-tuned and better thought-out information and communication processes are called for. A further final observation on public information is made below.

### 5.3 *REALISM*

It is important to note the strong sense of social resilience shown through our groups. Realism about uncertainties, about lack of power and control, and about dependency, was mitigated by positive recognition of the industry's vital role in the area, and by strong social ties in a variety of different networks of support and identity in the West Cumbrian area. There was also a lively capacity for 'black humour' about the risks, the agencies in charge, and other aspects. This is one generally recognised mechanism for domesticating threatening and disorienting experiences which could otherwise undermine daily life.

An important practical point follows from the observation about the realism over uncertainties which most people routinely show in daily life. This realism is rarely recognised by experts and authorities in risk communication; indeed they often lament what they regard as the public's naiveté in supposedly demanding zero uncertainty or risk, and communications are often purged of reference to uncertainty, in reflection of this cardinal assumption. Consistent with previous work, this research shows this model of the typical public to be unfounded, and communications based on it to be profoundly misguided to the point of undermining the public credibility and trust of the institutions involved.

### 5.4 *DENIAL AND DISEMPOWERMENT*

Another psychological mechanism for handling large and ill-defined uncertainties and contradictory pressures is boundary construction around familiar and secure areas of experience and identity, thereby shutting out threatening forces and issues. The researchers found a strong propensity for boundary construction of just this general kind. Sometimes it was of a

physical-geographical nature, notably in the separation of the Nirex radwaste issue as at the nearby village of Gosforth, as if that were 'somewhere else' altogether, and in the separation of the coastal strip near Sellafield as somewhere entirely different from the Lake District National Park. At other times almost any development however large and uncertain, could be fenced off psychologically by determined assertion that it would 'not affect me' behind whatever frontier had been erected to ward it off - a familiar and supporting work-community; a new, even more localised physical terrain; even family networks. The same basic process was evident in the frequent assertions that there was no-one that could be completely trusted short of oneself - the ultimate defensive boundary.

Again, as with so much else, these social-psychological processes can be seen to have both positive and negative implications. On the positive side is an enormous social-moral resource, of resilience and strength in the face of whatever might arise in the way of new uncertainties, interventions and threats. However on the negative side is a shrinkage in the horizons of agency and responsibility which these defensive boundaries also entail. This partly self-induced disempowerment is on its own an unhealthy social syndrome. Combined with the ready recognition of the hazards faced through living in the area, and the awareness of the rest of the country's perceived (but probably exaggerated) tendency to denigrate it as compliant in meekly accepting nuclear wastes, this more-or-less forced defensiveness issuing in shrinking horizons of responsibility only reinforces the sense of stigma that was evident in our group discussions, albeit often accompanied by the sense of pride already noted.

It is also worth considering the suggestion that another aspect of the same psychological process of boundary-construction is reflected in the extreme difficulty which nearly all our groups showed about discussing the long-term future. This may be a further reflection of shrunken moral horizons, also encouraged by understandable immediate concerns about jobs and recession.

#### 5.5 *RELATIONAL PERCEPTIONS*

A penultimate observation which arises through most of the foregoing specific points, derives from the unsuspected vigour of the awareness which almost everyone showed for their social position in relation to other social groups, locally and more widely. This general point came out in different ways depending on whatever specific issue was being discussed. Although this came over frequently as the sense of stigma discussed above, a corollary was the underlying sense of unfairness that if West Cumbria was expected to shoulder such burdens for the rest of British society, then it was not receiving its due rewards. This might mean not only remedying once and for all the inadequacies of its communications and general infrastructure, but also tackling the felt lack of opportunities, for example in further education and training. As with most kinds of blight, this was just as difficult for local people openly to describe, because doing so amplifies the sense of blight.

In practical terms, it would seem to be the very minimal requirement, that if the area is to experience the further intensification of nuclear commitments

involved in THORP and possibly a long-term radioactive waste repository, it should receive commensurate investment in high quality state-of-the-art services, for example in communications and transport as well as (re-)training and new higher education support. Such commitments would go some way to alleviating the heavy sense of neglect and stigma relative to the rest of society that presently colours local approaches to questions about nuclear development.

Finally, this implicit sense of relative experience to the rest of modern society also throws up a further more subtle and difficult issue hinted at in our research. Much of the self-congratulatory public rhetoric of the 1980s was about rolling back the allegedly suffocating forward creep of monolithic state-corporatist institutions, and the associated culture of dependency and control that they were claimed to impose. Coinciding with this, for better or for worse, has been the advance of post-modern scepticism towards the all-embracing control offered over all realms of experience and responsibility by a monolithic version of scientific-technological rationality, deterministic and uniform in its social-cultural temper. Whilst the rest of society has supposedly been learning to swim in the less deterministic and less all-controlling, more exhilarating currents of post-modern diversification, areas like that around Sellafield have remained, monolithically dependent upon an unreconstructed industrial icon of modernism, looking out it seems with some sense of regret or loss at missing out. The paternalistic reflexes of companies like BNFL towards the public are to give the certainties which, in good faith, they think the public needs. However this reaction, based as we have argued on an incorrect model of the public, only tends inadvertently to perpetuate the public's sense of dependency and control, hence perhaps also of separation from the rest of 'ordinary' society; and it is in any case on our reading unnecessary and self-defeating.

As with most of the other significant attitudinal stances we have uncovered however, this one is also multidimensional, because of course, if the post-modern revolution is under way, then the predominant experience of it for many in other parts of Britain since the 1980s has been unemployment and social disintegration. Whatever the discomforts and anxieties that come with it, Sellafield, at least so far, has offered a massive bulwark against these more immediate insecurities, though a tacit recognition of a deeper vulnerability in being so singularly dependent upon one part - the most controversial and polluting - of a contested industry, appears to lie at the root of some of the anxieties expressed in the focus groups.

## 5.6 PRACTICAL OBSERVATIONS

Finally, it is appropriate to highlight the three most important concluding observations of a practical kind which we have drawn from the fieldwork discussions.

(1) The local authorities in Cumbria have a particular responsibility - and opportunity - to re-open debate about the currently dominant framings of risk issues so that these can embrace broader relevant social factors of the kind identified in this research. They could thereby more constructively represent and support local people in their perceptions and concerns about risks in connection with West Cumbria's nuclear industry. The conventional risk analysis methodologies used by the nuclear industry and the regulatory authorities are largely restricted in their scope to technical definitions of risk. These should not continue to be relied upon as the predominant framework for assessing the impact of new, or existing, risk-associated developments upon local people or places. The broader and more complex range of factors experienced as relevant by ordinary people, and recognised by research as material and legitimate, needs to be defended by local democratic institutions, against the inadvertently patronising neglect by more technically oriented agencies. This implies a new and more independent role than hitherto for local authorities in relation to public risk questions.

(2) The public is generally more mature and realistic about risks and uncertainties than it is given credit for by risk-managing authorities and related technical experts. Thus the typical assumption which shapes much public information about hazards, incidents and the like, namely that it should portray as much certainty and control as possible because that is what the public needs, may need to be sharply revised. The model of the public as expecting or wanting a zero-risk, zero-uncertainty environment is simply false; furthermore it has placed excessive strains upon the industry in terms of public information release. With a more realistic model of the public, there could be relaxation about the anxious concern to portray control, without this resulting in public hysteria or revolt. Given that conventional information practices meet with public scepticism anyway, precisely because information appears too late, and often apparently too 'tidied up', such relaxation could well actually benefit the industry in terms of local public perceptions.

It is necessary here to acknowledge a dilemma however. One reason for non-relaxation is that public information goes out both locally, and nationally. Especially at the national level, committed opponents of the industry scan the public information pronouncements specifically to find weaknesses and points to exploit in a campaign. In this context, relaxation of the kind suggested above to be positive locally, could play into the hands of opponents in a wider context. This is indeed a difficult dilemma; but it appears that at present, practices and assumptions are being dictated by a polarised model of committed opponents as the sole audience for information. As a result the local population is being made to suffer extra pain, being neglected and treated to the same mistrust by the industry as it reserves for its committed opponents. The high costs - and indeed intrinsic unfairness - of this industry

orientation to public information deserve to be reviewed critically with the local population centrally in mind.

(3) The researchers have identified a hitherto unsuspected connection between the sense of neglect and frustration felt locally about the lack of infrastructural investment, and the possible hardening of local antipathy, especially towards the importation of foreign nuclear waste. The connecting concept is the sense of stigma felt in the community, at being taken for granted as compliant in accepting (after rejection everywhere else) the Nirex radioactive waste facility, whilst not even fighting harder for at least the compensating benefits of a really modern infrastructure. Here it is also important to remember the finding, against dominant existing assumptions, that support for nuclear developments as measured in opinion surveys is less solid and positive than usually assumed, and based more upon fatalistic resignation than positive active espousal. Thus the possibilities of a 'surprise' turn for the worse in public attitudes in the area should not be ruled out. It appears that even were UK waste to be accepted, there could well be a stronger than anticipated reaction against the stigma of being thought of as the easy option for foreign wastes.

Thus an improvement in the local community's sense of its own status could prove more important than existing understanding tends to suggest. Part of this improvement in community self-esteem might involve serious investment in transport, communications, training and higher education, housing and leisure facilities, for example. If the festering sense of humiliation over the infrastructure were to combine with that over being 'the world's compliant nuclear dustbin' the result could be an intense and hitherto unsuspected reaction against imported waste. This could also have uncertain knock-on effects for further nuclear developments in the locality. On the other hand, if the infrastructure were to be improved, the general sense of stigma would be considerably diminished, and the negative 'multiplier' effect on perceptions of foreign nuclear waste imports might be reduced. Thus the case for urgent and major improvements in the infrastructure is intensified by these less obvious considerations arising from this study's interpretation of risk perceptions. This specific issue, important as it is, should be seen as part of a more general syndrome of dependency, disempowerment and fragile community self-esteem that needs - and deserves - additional longer term responses.

#### 5.7 *SUMMARY OF CONCLUSIONS AND PRACTICAL OBSERVATIONS*

- The research reveals the existence of more complex anxieties about risk in West Cumbria's population than previous attitude surveys have shown.
- People's attitudes towards risk are generally more open-ended, 'social' and 'negotiated' than is implied in conventional opinion or attitude surveys. The latter may tend therefore to misrepresent public sentiments in relation to such matters.
- There is immense economic dependency on Sellafield and the nuclear industry in the area. Local attitudes towards risk - including apparent

acceptance - need to be interpreted carefully in the light of the psychological inhibitions this dependency imposes.

- There is a widely felt sense of stigma arising from the degree of dependency on the nuclear industry in the area, with its attendant bad publicity, albeit this is sometimes mitigated by a countervailing sense of pride.
- Working class people tend to feel more resentful of the risks arising from the industry than do middle class people. This difference appears to relate to the relative senses of agency, or power to influence, in the two groups.
- To ease the sense of being trapped in the area, there is a need for better schemes for buying the houses of individuals wishing to leave, and for better dissemination of information about safety incidents at Sellafield. Existing mechanisms, such as the Local Liaison Committee, appear to be inadequate.
- People are much more realistic about risk and uncertainty than the industry and regulatory authorities seem to realise. Communications based on the assumption that the public is seeking 'zero risk' are misguided, and are undermining the credibility of the institutions involved.
- Greenpeace is seen by a significant number of local people as an effective 'regulator' of BNFL. This may reflect the fragility of confidence in 'official' regulatory agencies.
- To cope with the uncertainties surrounding Sellafield and the proposed Nirex complex, local people tend to construct 'boundaries' aimed at excluding such realities from their awareness. This reflects a disturbing shrinkage of personal 'agency' and tends to reinforce the sense of stigma noted above.
- Nirex has little distinct identity in local people's minds, though it is felt to be an 'outsider', unacceptable elsewhere in the country. There is clear indication of antipathy to the idea of its handling foreign wastes, at any facility in West Cumbria.
- The widely felt sense of stigma and blight is reinforced by the continuing inadequacy of centrally-funded infrastructure and of alternative opportunities within the area.

#### *Practical Observations*

- The local authorities should play a much more active representative role vis a vis public perceptions of risk, since the currently dominant methods used to evaluate such issues, by the industry and government regulatory agencies, fail to encompass the full range of relevant public concerns.

- Information policies by the industry should be made more directly responsive to local concerns, even though this may cause difficulties at a national level.
- Improvements to local infrastructure and other facilities funded by central government could help ease the sense of stigma and some of the associated risk anxieties.

## NOTES

- <sup>1</sup> Williams, W. M. (1969)
- <sup>2</sup> Cloke, P. and Little, J. (1990)
- <sup>3</sup> *ibid.*
- <sup>4</sup> 2.8% of economically active, resident working people in Allerdale and Copeland district compared to 1.5% in Britain (1987 Census of Employment;NOMIS. (Districts are defined in terms of 1981 wards)).
- <sup>5</sup> Commission of the European Communities: 1987 Farm Structure Survey.
- <sup>6</sup> Wynne, B. (1992a)
- <sup>7</sup> Earth Resources Research (1985)
- <sup>8</sup> Jackson (1981)
- <sup>9</sup> As specified in the White Paper on Employment Policy (Cmd.6257 of 1944)
- <sup>10</sup> Jay, K. (1954)
- <sup>11</sup> Development Commissioners for Cumberland (1957)
- <sup>12</sup> Piedad (1991) p. 6
- <sup>13</sup> ERL (1992a)
- <sup>14</sup> The employment effects concerning the future of THORP have been examined more fully in the ERL Report: *THORP and the Revised Sellafield Discharge Authorisations* (1992a).
- <sup>15</sup> Cumbria County Council in Allerdale Borough Council (1992)
- <sup>16</sup> Copeland Borough Council (1992)
- <sup>17</sup> Segal Quince Wicksteed (1992)
- <sup>18</sup> Allerdale Borough Council (1992)
- <sup>19</sup> ERL (1992a)
- <sup>20</sup> Earth Resources Research (1985)
- <sup>21</sup> Allerdale Borough Council (1992)
- <sup>22</sup> Copeland Borough Council (1992)
- <sup>23</sup> 1,169 direct and indirect job losses in Whitehaven and 474 in Workington, as a result of the decrease in construction at BNFL's THORP reprocessing plant; in Workington, jobs will be lost as a result of the withdrawal of British Coal from open cast mining; further redundancies in Workington have arisen as a result of the closure of Volvo Bus in April 1993; in total, in WorkingtonTTWA, there have been over 1900 redundancies announced by manufacturing employers since the Census of Employment in 1989; up to (depending on contacts) 5,500 job losses may be felt in Barrow at VSEL (VSEL pers. comm. 1993).
- <sup>24</sup> 1991 Census. County Report, Cumbria.
- <sup>25</sup> 1991 Census, Employment Gazette, in Copeland Borough Council (1992).
- <sup>26</sup> 1987 Census of Employment; in Piedad (1991)
- <sup>27</sup> Allerdale Borough Council (1992)
- <sup>28</sup> Allot and Lomax (1991), Copeland Borough Council (1992), Allerdale Borough Council (1992).
- <sup>29</sup> *Ibid.* (Examples of the prominence of these concerns may be seen in the local press (for example Whitehaven News) and were witnessed in anecdotal evidence throughout the research).
- <sup>30</sup> Copeland Borough Council (1992).
- <sup>31</sup> Pers. comm. (1993)
- <sup>32</sup> Allerdale Borough Council (1992).
- <sup>33</sup> *BNFL News*, January 1993.
- <sup>34</sup> Allerdale Borough Council (1992); pers. comm. (1993).
- <sup>35</sup> ERL (1992a), Piedad (1991).
- <sup>36</sup> ERL(1992a)
- <sup>37</sup> Jay, K. (1954)
- <sup>38</sup> Jay, K. (1954)
- <sup>39</sup> Weldon, S. (1991)
- <sup>40</sup> Jay, K. (1954)
- <sup>41</sup> Jay, K. (1954)
- <sup>42</sup> Copeland Borough Council Document, Population File 416
- <sup>43</sup> Jay, K. (1954)
- <sup>44</sup> Mr Tom Tuohy, deputy manager of the Windscale and Calder Hall Works at the time of the 1957 fire. Quoted in McSorley, J. (1990) p.9
- <sup>45</sup> Taylor, P.J. (1982); Crick, M.J. (1982); Crick, M.J. and Lindsley, G.S. (1983)
- <sup>46</sup> For example a leak in a silo (B38) during 1976, resulting in contamination of local beaches with tritium. The most cited example is that of November 1983, when discharges from storage tanks to the

## Continued

Irish Sea resulted in contamination of local beaches and BNFL warned the public to avoid 'unnecessary use' of the beaches along a twenty mile stretch of Cumbrian coast until June 1984.

<sup>47</sup> An accident at B204 reprocessing plant resulted in the contamination of 35 workers, and the closure of the plant.

<sup>48</sup> The entire BNFL plant was threatened with closure after an incident during 1986 and ensuing formal safety audit by the Health and Safety Executive.

<sup>49</sup> For example, COMARE (1986), paragraph 5.5.

<sup>50</sup> A combination of shifts in government policy and the method and timing of the site selection process has led to some uncertainty over the ability of Nirex to achieve their aims (RWMAC 1988, p. 14) and to the legitimacy of the process itself (Kemp, R. 1992, p.81).

<sup>51</sup> For example, Yorkshire Television's documentary 'Windscale: the nuclear laundry' broadcast November 1983.

<sup>52</sup> Sir Douglas Black's committee of enquiry was commissioned in the same month as the YTV programme (see previous footnote) to look into the recent allegations made therein.

<sup>53</sup> Black Report (1984)

<sup>54</sup> Gardner, M.J. *et al.* (1990).

<sup>55</sup> For example, the headline in BNFL News, THORP Special edition, 1992: 'BNFL hits back at the campaign of distortion and half truths against superplant'.

<sup>56</sup> An accidental leakage of HLW at Sellafield during 1976 caused major concern, not least due to the belated reporting of the accident to the Department of Energy and the HSE. Reactions from government were of deep concern 'that there should be any disinclination to be quite open about these matters' (Then Energy Minister, Tony Benn, in *The Times*, 11 December 1976, quoted in Blowers, A. *et al.* (1991)). More recently, Jack Cunningham M.P. expressed concern at the BNFL decision not to inform him of a recent accident during his visit to the THORP plant.

<sup>57</sup> For an explanation of reprocessing: Berkhout, F. (1991), Chapter 5.

<sup>58</sup> See MacKerron, G (1992) for an analysis of these early rationales.

<sup>59</sup> The Windscale inquiry was held to investigate the application by BNFL to build a 1200 tonne per year thermal oxide reprocessing plant (THORP) for spent nuclear fuels from Britain and overseas.

<sup>60</sup> Breach, I. (1979)

<sup>61</sup> Walker, W. and Berkhout, F. (1992); Berkhout, F and Walker, W. (1991)

<sup>62</sup> Sellafield Newsletter 2.3.93

<sup>63</sup> Royal Commission on Environmental Pollution (1976)

<sup>64</sup> Bertin, L.E. (1957) *Atom Harvest* (London Scientific Book Club, 1957), p. 230, quoted in Blowers *et al.* (1991).

<sup>65</sup> For a discussion of policy shifts see Kemp, R. (1992), Chapters 3 and 4.

<sup>66</sup> Kemp, R. 1992, p.169.

<sup>67</sup> Radioactive Waste Management Advisory Committee (1988), p.14

<sup>68</sup> RCEP (1976) Page 81, paragraph 202.

<sup>69</sup> RWMAC (1993) p.12, UK Nirex Ltd. (1992)

<sup>70</sup> ERL (1992b)

<sup>71</sup> A former ICI anhydrite mine at Billingham was identified in 1983 as a potential site for the deep disposal of long-lived ILW. A shallow repository at a CEGB-owned site at Elstow in Bedfordshire was identified as a site for short-lived ILW and LLW.

<sup>72</sup> Kemp, R. (1992) p. 40

<sup>73</sup> Bradwell (Essex), Fulbeck (Lincolnshire) and South Killingholme (Humberside).

<sup>74</sup> Allerdale Borough Council (1992); Copeland Borough Council (1992); Kemp, S. (1992)

<sup>75</sup> Kemp, S. (1991) p.146, p. 150

<sup>76</sup> Kemp, S. (1991) p. 148; Richardson, P.J. (1991) in Kemp, S. (ed) *op. cit.* p. 47-49.

<sup>77</sup> Jay, K. (1954); Pida (1991). See Pida (1991) for a breakdown of proportions of local/non-local employees recently employed in construction at BNFL.

<sup>78</sup> Nirex (1987), Nirex (1992)

<sup>79</sup> Wynne, B. (1992b) in Krimsky, S. and Golding, D. (Eds) (1992) p. 279

<sup>80</sup> The Royal Society (1992)

<sup>81</sup> Otway (1992); Otway and Thomas (1982)

<sup>82</sup> Slovic, P. (1992)

<sup>83</sup> For example Jupp and Irwin (1989); Wynne 1992c; The Royal Society (1992), Chapter 5.

<sup>84</sup> For example, Michael (1992); Jupp (1989); Irwin, Dale and Smith (1993); Jupp and Irwin (1989)

<sup>85</sup> Wynne, B. (1992b) in Krimsky, S. and Golding, D. (1992) p. 282

<sup>86</sup> ICM (1991a), ICM (1992), Copeland Borough Council (1992a)

## **Continued**

<sup>87</sup> ICM (1991b)

<sup>88</sup> Measured at 59 per cent and 45 per cent respectively.

<sup>89</sup> Measured at 38 and 21 per cent respectively.

<sup>90</sup> ICM (1992)

<sup>91</sup> ICM Environment Trends Monitor (1991b)

<sup>92</sup> MacGill, S. (1987), Chapter 3

<sup>93</sup> Since there were only two apprentices in each group, it was decided that only one researcher should be present.

<sup>94</sup> Weart, S. (1988),p.266; Lifton, R. (1979)

<sup>95</sup> Weart, S. (1988) p.166; Lifton, R. (1979)

<sup>96</sup> Billig, M. (1987)

<sup>97</sup> All Christian names in the reported discussions have been changed.

<sup>98</sup> For example Harding, S. (1986); Singleton, V. (1993)

<sup>99</sup> Otway,H. and Wynne, B. (1989)

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## ANNEX A – REFERENCE SCENARIOS

### *REFERENCE SCENARIOS FOR THE DEVELOPMENT OF THE NUCLEAR INDUSTRY IN WEST CUMBRIA*

Three hypothetical scenarios were developed for the internal use of the research team, in order to gain a solid background upon which stimulus material to be used in the focus group sessions could be based. The time scale for which the scenarios are envisaged is the short to medium term. The scenarios are not in any way intended as forecasts, but rather as devices for highlighting possibly relevant facets of different futures for the UK nuclear industry. They were based on factual information surrounding civil nuclear issues, and constructed entirely for the purposes of this research.

**The 'strong' scenario** for the nuclear industry had four main elements:

- continued government support for nuclear industries in the UK and EC;
- expansion of the nuclear component of the UK electricity supply industry;
- national and international trade secured with the commissioning and subsequent operation of THORP;
- government endorsement of UK Nirex plans to build a deep underground repository near Sellafield for the disposal of UK and foreign low-level and intermediate-level waste. The repository is built and receives UK and overseas radioactive waste.

**The 'weak' scenario** postulated static or negative growth for the civil nuclear industry. Main inputs to this scenario were:

- post-1994 reduction in UK and EC government support;
- UK nuclear power generation fails to be sustained on a commercially viable basis and is gradually phased out in the national energy strategy;
- the practice of reprocessing spent fuel is superseded by dry storage of spent fuel on site at power stations: THORP is not commissioned for operation;
- plans for the Nirex deep repository are forestalled.

**The third scenario** was essentially a variation on the first two scenarios, with two main components:

- the 'front end' of the UK nuclear industry - nuclear power generation - is phased out as soon as practicable for each individual power station after the 1994 review;
- a national strategic plan for radioactive waste disposal to be based at Sellafield is agreed, and adopted. The research base in spent fuel management and decommissioning at Sellafield is strengthened with government support. BNFL comes to represent a global centre of excellence in the areas of dry storage, waste management and decommissioning. Plans for the Nirex repository to be based at Sellafield are endorsed by government as part of a wider drive to solve the dilemmas associated with the disposal of all radioactive wastes.

Three 'cases', A, B and C were drawn from the hypothetical scenarios outlined above. Cases A, B and C thus became stimulus material for the focus groups and were

introduced during the discussions on large, easily visible boards. Scaled down versions of these boards are shown on the following page.

### Case A

- Nirex repository goes ahead
- THORP is commissioned
- UK nuclear power expands

### Case B

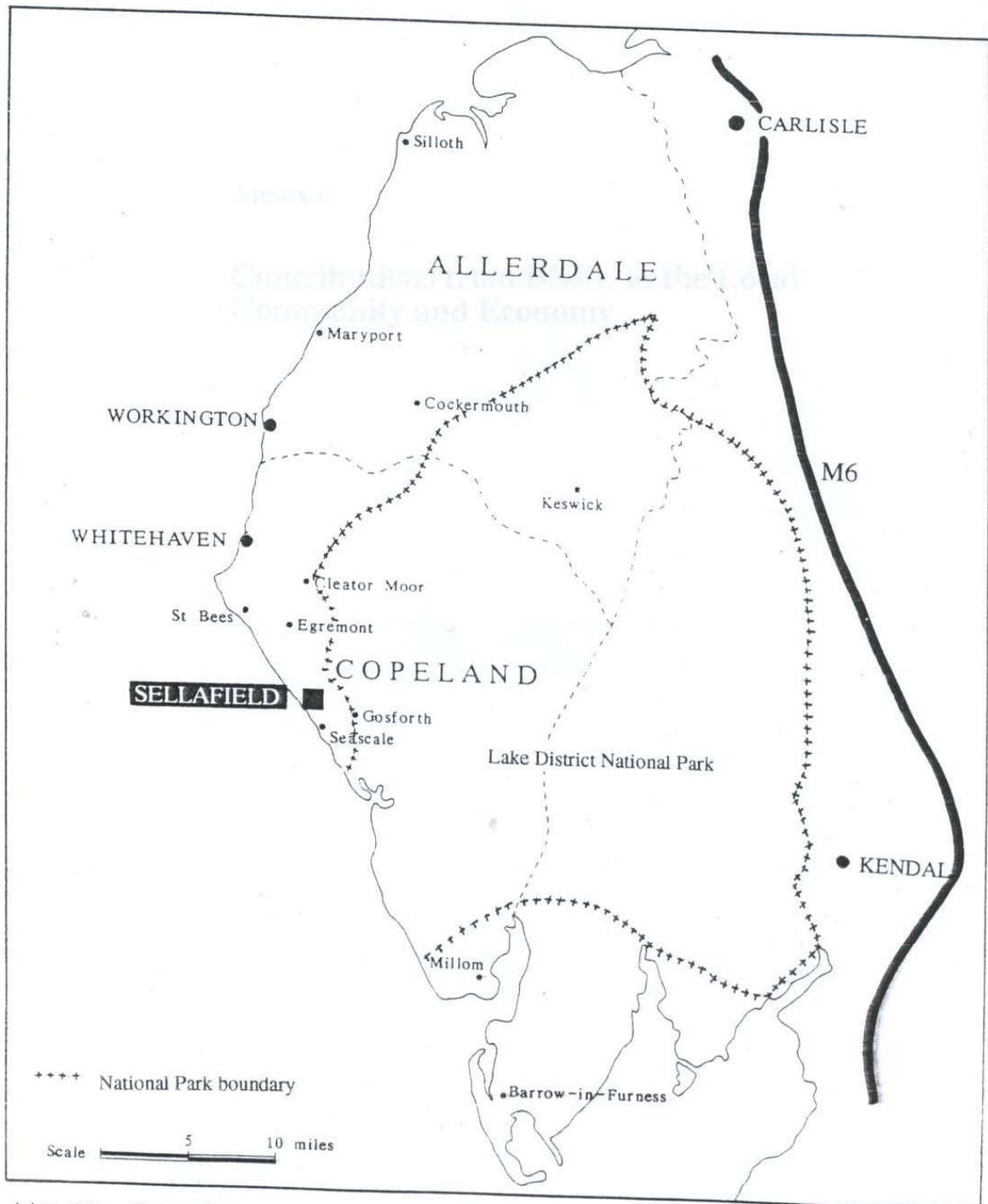
- Nirex repository plans cancelled
- THORP is not commissioned
- UK nuclear power phased out

### Case C

- Nirex repository goes ahead
- Sellafield becomes a centre for the management of UK and foreign spent fuel
- UK nuclear power phased out

# ANNEX B – MAP OF WEST CUMBRIA

## WEST CUMBRIA



Adapted from Pineda (1991)

## ANNEX C - BNFL'S CONTRIBUTIONS TO THE LOCAL ECONOMY

### *A SUMMARY OF BNFL'S CONTRIBUTIONS TO THE LOCAL COMMUNITY AND ECONOMIC DEVELOPMENT.*

#### **1976-1983**

- Improvements to Whitehaven Town Centre through the renovation of 60 properties.
- Road, rail and sewerage improvements near to, and at, Sellafield.
- Construction of a new, high standard, 250 bed Hostel for BNFL staff.
- Landscaping at Sellafield.
- Construction of a new Training Centre for apprentices.
- Grant to the local authority for recreational facilities.

**Total Cost: £ 22.5 m.**

#### **1984-1988**

- Improvements to Maryport Harbour and support for a Heritage Park at Maryport.
- Construction and revenue support for the Copeland Athletics Stadium.
- Support for Rugby League activities.
- Renovations to Whitehaven Town Hall.
- Grants to Cumbria County Council for an archaeological dig at Birdoswald and for Hawse End Health Centre.
- Assistance for Cumbria Tourist Board marketing activities.
- Sponsorship of Lowther Horse Trials, Seascale Pro-Am Golf Tournament and general sports activities.
- White Heritage Award.

**Total Cost: £ 3.0 m.**

#### **1988 Onwards**

- Re-direction of community support towards economic development measures.
- Formation of the West Cumbria Development Agency and the West Cumbria Development Fund, tasked with business development and support and attraction of inward investment. (Support is restricted to the Allerdale and Copeland areas).

**Total Commitment: £1 m per year for 10 years.**

(Source: BNFL 1993 (unpublished))