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# The Politics of Radwaste Management in Sweden

## Civil Society, the Economy and the State

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Taking as its point of departure a conceptualization of society as comprising three interdependent spheres – civil society, the state and the economy – the article focuses on Swedish policy for radwaste management. Nuclear power policy in Sweden was elaborated in cooperation between the state and the industry, but came in for lively discussion and politicization during the 1970s. The problem of radioactive waste was an essential part of the critique of nuclear power, but despite that radwaste management has been depoliticized, and today it is the responsibility solely of the nuclear companies themselves. Sweden, like many other countries, will during the 1990s start to decide where to locate the repository for spent nuclear fuel. However, basically because of the possibility of local opposition, the siting of such facilities is anything but unproblematic, and therefore the attitude of the civil society to a site is an essential factor to be taken into consideration. This attitude has to do with circumstances that are more or less specific to each locality. Hence, when it comes to the siting of radwaste, the role of the municipality becomes crucial, situated as it is at the interface between civil society, the state and the economy.

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## 1. Introduction

Radioactive waste management and disposal are a matter of great public concern. Today, all nuclear power countries seem to have geological disposal as their ultimate solution for processed or non-processed spent nuclear fuel (Carter 1987:3), but still no state has definitively decided where the siting shall be. According to present plans, Sweden, France and the USA seem to be the first countries that will take this decision (Lidskog & Elander 1992). Although different policies for radwaste management have developed in different countries, the basic problem in this matter is the same everywhere: to find a method and a place for isolating the radwaste from its natural environment (Berkhout 1991:24).



However, if no satisfactory and publicly acceptable site can be found, then nuclear power itself will be threatened, and thus radwaste management has now become an 'Achilles heel' of nuclear power, being currently the most controversial and contentious area of nuclear policy (Blowers et al. 1991:1; Kemp et al. 1986:10; Openshaw et al. 1989:18). Nuclear power itself, more than other environmental issues, seems to generate fear about democracy versus state control over people and the environment (Blowers & Pepper 1987:23). The siting of nuclear power plants has been accomplished in most countries with only symbolic input from the public. And if the procedures for siting nuclear power plants seem unclear to many observers and critics, radwaste respository siting procedures are even more ambiguous (Solomon & Shelley 1988).

To site plants for hazardous waste is anything but unproblematic, not least because of local opposition. This opposition is often interpreted in terms of the distinction between local interests and the national interest: from the national perspective the installation is seen as a necessity whereas from the local perspective it is most often a serious nuisance, a negative externality imposing costs on the local community that far outweigh the local benefits (Blowers et al. 1991:19; Lidskog 1993a; Popper 1987). It is, in short, a LULU – a Locally Unwanted Land Use. Closely connected with this perspective is the pejorative concept NIMBY (Not-In-My-Backyard), by which the opposition is seen as a negative, selfish and emotional local reaction against a central decision or plan. This reaction is often perceived to be connected with fear and distrust of science and government (see e.g. Carter 1987; Openshaw et al. 1989). Despite the frequency with which the NIMBY concept is being used, its adequateness is strongly questioned by some researchers (e.g. Freudenberg & Steinsapir 1991; Kemp 1990; Lake 1993; Lidskog & Elander 1992). Instead of seeing the conflicts as simple tensions between local and central interests, or even between particular and public interests, there are efforts today to locate them in a wider societal context, putting more emphasis on underlying structural conditions that precede and determine them (e.g. Berkhout 1991; Lake & Disch 1992).

This article aims to analyse the Swedish policy for radwaste management. An analytical point of departure is that the conflicts emerge on the borderline between spontaneous organizing and institutionalized planning and politics, between civil society and the state. However, the distinction between civil society and the state needs to be further elaborated owing to the fact that the two concepts are often discussed and developed at an abstract level where several meanings and various implications are attached to the distinction. Thus the concepts need to be specified when they are to be used in empirical analysis (Goodwin 1988; Keane 1988; Urry 1981). The ambiguousness of the concepts is due, according to Keane (1988:13–31), to the different uses of the distinction. The state–civil society schema can be understood in at least three ways, namely analytical, normative and political. Although these three approaches most often criss-cross and complement each other, they can also produce divergent types of claims and therefore they should be carefully distinguished. In this article an analytical approach is chosen, which aims to develop an explanatory understanding of complex socio-political realities rather than to form normative judgements (the normative approach) or to recommend courses of political action (the strategic/political approach). By means of this approach it becomes possible to identify key institutions and actors, examine their complex patterns of interaction and attempt to reach some conclusions – based on theoretical distinctions, empirical research and informed judgement – concerning the origins, patterns of development and (intended or unintended) consequences.

This article is in four sections. In the first section an approach is elaborated that takes into consideration the underlying structural conditions of capitalist society. The policy for nuclear power will be analysed in the second section and the radwaste management in the third. This will be done by stressing the interrelations, interdependency and struggles between the spheres of civil society, the state and the economy. Lastly, the present situation and the future prospects concerning the search for a suitable place for radwaste disposal in Sweden will be discussed.

## 2. Civil society, the state and the economy

The classical civil society–state dichotomy was created against the background of the emerging nation-states, and civil society was seen as a natural sphere, based on an ahistorical understanding of society. However, the modern sociological understanding is to view society as historically produced, an understanding that can be traced back to the eighteenth century (with thinkers such as Ferguson and Smith) (see e.g. Eriksson 1988). The spheres of society are to be seen as a contingent phenomena, the products of a certain amount of his-

torical accident, of circumstantial choices made by political agents, and of pre-existing structures in flux owing to a wide range of interconnected changes (Cerny 1990).

A historical understanding of society has meant that the classical dichotomy – which presupposed that the economy belonged to civil society (e.g. Locke 1960; Ferguson 1966; but also Marx 1973) – has become obsolete. Agriculture, crafts, manufacturing and trade became less controlled by the church and the crown in the seventeenth and eighteenth centuries. The invention and implementation of machinery and the building of factories, together with the increasing production of goods for sale as commodities, led to the emergence of the economy as a relatively independent sphere in society (Østerberg 1989). Thus in this article a conceptualization of society as comprising three different but interdependent spheres – civil society, the economy and the state – will be adopted.[1]

The *state* – or, more properly, the nation-state – is a universal form of organization that has the administrative complexity to develop policy, the legitimate government to make binding decisions, the economic resources to carry them out and the coercive power to enforce them (Giddens 1985). The ultimate base of the state's power is its monopoly of centralized physical coercion (Weber 1977:40), and consequently coercion is the ultimate guarantee of the system of law. The state is thus to be seen as those institutions that directly or indirectly are dependent on centralized physical coercion.

The sphere of the *economy* is constituted first and foremost by production, or industry, and thus the concept of the economy is more exclusive than the often used concept of the market, which also includes exchange and consumption (which partly belong to the sphere of civil society).

The sphere of *civil society* can be defined negatively as a set of social practices and relations outside the state and the economy, and positively as the sphere where human beings as subjects are constituted and reproduced (Urry 1981; Wolfe 1989a). It is in civil society that human existence is reproduced biologically, materially and socially, and it is civil society that provides social integration (Alexander & Smith 1993).

To see the spheres as historically produced, as contingent phenomena, is not to be confused with voluntarism. On the contrary, the structuration takes place in a capitalist society with its overall structural conditions. This means that there are systematically identifiable relations between the spheres that make it possible to account for both the causes and the constrained consequences of social practices and social struggles (see Urry 1981). In capitalist society, the state has need for capital accumulation on its own territory.[2] At the same time it needs the legitimacy provided by civil society. The economy needs labour power and consumers from civil society and a state that provides a legal framework that ensures capital accumulation. Civil society needs the state to ensure its fundamental conditions for human reproduction, but also a well-functioning economy, which is a prerequisite for its material reproduction. This interdependency is to be seen as a basic feature of the spheres, which both constrains and enables their activities. The interdependency between the spheres and their relative autonomy vis-à-vis each other creates the dynamics of the capitalist society.

Civil society consists of heterogeneous, contradictory and conflictual social practices. One example is that the dimensions of reproduction – biological, material and social – are in many cases in opposition to each other. Material reproduction in a capitalist society implies a need for work opportunities. At the same time, an industry that provides this can in the long run threaten the social as well as the biological reproduction of civil society. From this perspective the importance of gaining hegemony of civil society becomes comprehensible. To make a struggle successful it is necessary to establish both a common identity among oppositional forces within civil society and viable collective organizations for this opposition (Urry 1982). To establish a common identity implies that hegemony needs to be gained over conflictual social forces and interests.

Not only civil society but also the economy and the state involve heterogeneous

social practices and conflicting interests. The state is no monolith but more to be seen as composed of different, often conflicting, interests. At the same time, other interests of civil society and the economy try to influence state decisions and actions, and thus major decisions and policies are to be seen as resulting from a complicated game to establish a temporary power bloc (Urry 1981:83). Also the economy has conflictual interests, where some industries are winners and others losers. In today's society, with its growing production of risks and hazards, tension between industries seems to be more frequent, a tension not least between different levels, e.g. global versus national and national versus local (Beck 1992b).

A specific policy is an outcome of a dynamic and developing process of interaction between a wide diversity of interests, and by building a policy network it becomes possible for some interests to change – or strengthen – the state's policy (Rhodes & Marsh 1992; Cerny 1990; Urry 1982). There are, however, different opportunities for interests and groupings to build a power bloc and to affect this policy, in that there are always social and spatial obstacles that affect the structure of a network and its possibilities of mobilizing and gaining resources (Gregory 1985; Hedström 1992; Hägerstrand 1967). And if no strong social mobilization and social struggle occur, structures tend to be reproduced and policy will be formulated according to the interests of the economy. Thus social struggles seem to be of crucial significance in transforming structure and policy (Urry 1982).

All social relations are both temporally and spatially structured. Thus civil society has not only a social but also a spatial dimension, which implies that civil society to a large degree is to be perceived as a local phenomenon (Urry 1982, 1985; Wolfe 1989b). People still live their lives locally and their consciousness is formed in a distinct geographical place; it is at the local level that the socio-spatial consciousness is formed and social reproduction occurs, and it is at the local level that environmental and social movements are particularly strong and effective (Lidskog 1994:ch. 8). However, the state and the economy do also have a local dimension, and all these different interests diverge in the municipality. Analytically, the municipality, with its relation to the state through legislation is to be seen as belonging to the sphere of the state. At the same time, it is important to notice that the municipality in many cases has considerable opportunity to develop a standpoint in opposition to that of the state. Thus the municipality is to be seen as an arena for different institutional claims (Burns & de Man 1987).

## 3. The development of nuclear energy in Sweden

Policy for radwaste management is to be seen as resulting from a dynamic and developing process involving a wide diversity of interests of civil society, the economy and the state. The interdependency and interrelation between these spheres are formed by historical circumstances and by the way the different spheres have used – and use – their relative autonomy vis-à-vis each other. This is made clear when one looks at radwaste management in different countries. Although the basic problem of radwaste management is the same everywhere – to isolate the radwaste from the natural environment until its radiation has diminished to an acceptable level – different radwaste policies have been formulated in different countries, depending on their respective histories, political cultures and institutional settings (Berkhout 1991:9).

### 3.1. Nuclear power policy: cooperation between the state and the economy

Although its nuclear programme is small compared with the nuclear programmes of other countries, on a per capita basis Sweden's commitment to nuclear power has been greater than that of any other country (Carter 1987:233). This can partly be explained by reference to its cold climate and its technology-intensive industry, which makes per capita energy needs high in Sweden. Sweden also has very limited natural gas reserves, and its hydropower resources have largely been exploited. This has made Sweden heavily dependent on imported oil. However, Sweden has uranium reserves – in fact more than any other

nation in Western Europe – and, when the policy for nuclear energy began to develop, the state saw this as a way towards self-sufficiency (Nelkin & Pollak 1977; Sahr 1985).

Ever since the beginning of nuclear power in Sweden, there has been close cooperation between the state and the nuclear industry. The underlying policy has been that the state should have the dominant role in the nuclear energy sector (Holmberg et al. 1977:22). During the planning period of the nuclear power programme there was a very strong consensus between the nuclear industry and the government, and the government did not question the nuclear industry's plans with technical and industrial assessments (Sundqvist 1991:36). On the proposal of the cabinet, several joint-stock companies with ownership shared between state and industry have been created (AB Atomenergi in 1947, Asea-Atom in 1966), including non-Swedish firms (Uddcomb Sweden in 1969). The explicit aim has been to create confident and flexible cooperation between the state and industry. The state is still – on an aggregate level – the major shareholder in the four joint-stock companies that own different nuclear power utilities.

Initially the official motive given for developing nuclear power in Sweden had to do with the need for energy. Gradually another motive became more important, namely the significance of nuclear power as an industrial–political interest. The strategy was to use nuclear power to make Sweden self-sufficient regarding energy and to attain low energy costs, and nuclear power was then perceived as a high-tech area with great development potential, thus attracting substantial subsidies from the state.

According to official policy during the 1950s the state was to continue to have the dominant role in the nuclear energy sector, because research into nuclear energy had great political and military significance and because central planning was perceived as necessary in this sector (Holmberg et al. 1977:22). In the 1960s, the close cooperation between the state and the nuclear industry became even stronger. A new joint-stock company, AB Asea-Atom, was created, with ownership shared between the state and the private enterprise Asea. This company became the main supplier to the majority of Swedish nuclear power plants. The Ministry of Industry considered in 1970 that nuclear energy seemed to be the best alternative from an economic point of view (Larsson 1986:33), and official confidence in it was vividly expressed by the proposal to build 24 reactors, planned to account for two-thirds of all electricity production in Sweden by 1990.

The cooperation initiated by the state was welcomed by the nuclear industry. In fact, the nuclear industry initially needed substantial subsidies from the state, and it was not until the middle of the 1960s that nuclear power began to be able to compete on its own (*Governmental Reports* 1976, No. 30:24). In 1972 the first Swedish commercial reactor began to operate. Through this cooperation between the state and the nuclear industry a power bloc, or policy network, was created. The network between the government and the nuclear companies – which developed both institutional and interpersonal dimensions – was crucial to policy-making in the energy sector (Sahr 1985:67). It is important to notice that the Ministry of Industry, which had a close and ongoing interaction with the government and governmental agencies, and with groups within industry and energy sectors, did not develop any relations with civil society and environmental organizations. Thus a policy network was here created that included the state and the economy but excluded civil society, and this network was very important in the creation of the nuclear energy policy.

There seems to have been a shared understanding within industry and the government concerning the need for continued energy growth. An underlying assumption was that the electricity-intensive processing industry had a very great importance for Sweden's economic well-being and for other sectors of industry too (Sahr 1985:64). Most of the official justification of nuclear power shows that nuclear power was couched in terms of the effect on employment and economic development, which can be illustrated in the energy proposal of 1975, where Prime Minister Palme stated that 'secure employment

requires a steady and good supply of energy' (*Governmental Bills* 1975, No. 30:8).

### 3.2. Nuclear questioning: the need to include civil society

The risks connected with nuclear power and radwaste had not been discovered at the beginning of the nuclear era. Nuclear risks – together with a lot of other environmental risks – are not discoverable from everyday experience, inasmuch as they are beyond ordinary human perception. Such discovery is 'knowledge dependent', and science is thus a 'sensory organ' for nuclear risk perception (Beck 1992a:27). There was no strong opposition to nuclear power in Sweden during the 1950s and 1960s, either from the state or from the economy and civil society (Larsson 1984; Jamison et al. 1990). During these two decades the nuclear industry and the state formed a strong policy network that was positive towards the development of nuclear power. The expansion of nuclear power was widely accepted, even hailed by some Swedish environmental groups as preferable to the expansion of fossil-fuel-based power and hydropower because of the lower air pollution and the possibility of preserving some of the remaining unspoiled rivers (Gustafsson 1993; Sahr 1985:31).

The first questioning of nuclear power emerged in the USA at the end of 1960s. At the beginning of the 1970s Hannes Alfvén, professor of physics and Nobel prize winner, changed from being a friend of nuclear power to being an opponent of it. The Centre Party, (the former agrarian party) with its environmental profile, was quick to integrate an anti-nuclear standpoint and made it into a voting issue. Parallel to the Centre Party's development of an anti-nuclear profile, grassroots and environmental movements in civil society began to resist official plans concerning nuclear power in Sweden. The nuclear power programme came to be seen as a symbol of bureaucratic centralization and an example of governmental paternalism (Nelkin & Pollak 1977:342; Svedin 1975:258).

In the 1973 election, the Social Democratic Party lost its majority in parliament, largely because of the Centre Party's criticism of nuclear power, and, as a result of the criticism, parliament decided on a one-year moratorium on further construction of nuclear reactors. The criticism of nuclear energy, together with the oil crisis during the winter of 1973/74, made parliament initiate an energy debate, with the explicit aim not only of discussing the matter within the political parties, but also of involving civil society in the debate. By doing so, the state hoped to gain legitimacy from the citizenry. This questioning made parliament initiate a 'major experiment in public education' during the years 1974–75 (Nelkin & Pollak 1977). Through the study circles managed by the political parties and the major popular organizations and financed with government funds, a major experiment in public education and consultation in the energy field was implemented. This public experiment was a result of the growing awareness among politicians of the need for public support when investing in nuclear energy. The goal was not primarily to get the citizens' opinion on nuclear power, but to create citizens' support for the nuclear policy (cf. Nelkin & Pollak 1977:342).[3] Although participation in the study circles was the largest ever in such circles in Sweden (about 80,000 people participating in all), the campaign did not succeed. The effects with regard to people's attitudes to nuclear power were small, and no consensus on nuclear power was gained. In September 1976 a survey showed that 55 per cent of the population opposed nuclear power (Holmberg & Asp 1984:284).

Prior to 1973 the political parties had not taken up positions on energy questions in relation to the government's commitment to nuclear power. By 1975, however, all parties in parliament had incorporated the nuclear issue in their different party programmes, taking positions on both the number of reactors and the annual growth in energy demand that would be an acceptable goal up to and including 1985 (Sahr 1985:20 ff). The political establishment also incorporated the issue in the administrative apparatus through the creation of new commissions and a new research programme (Jamison et al. 1990:40). During the 1976

and 1979 elections, nuclear power was a voting issue, and in both elections the non-socialist coalition – with the Centre Party as the major party – won a majority of votes and formed the cabinet. As a consequence of the tension regarding nuclear power the cabinet resigned in 1978 and was replaced by a minority cabinet (Liberal Party and Centre Party). In 1978, the People's Campaign Against Nuclear Power was established and became the major organization for resistance to nuclear power. Some 100,000 people were involved as activists in the People's Campaign during the period 1978–80 (Sjöberg 1980:36).

In March 1979, the Harrisburg accident occurred, and parliament decided on a referendum on nuclear power. By this decision, the nuclear issue was to a large degree removed from the election campaign in 1979 (cf. Sahr 1985:5). In March 1980, the referendum took place, and soon after the referendum parliament decided to implement the prevailing policy: to complete and start up the planned six nuclear power plants (which were under construction), thus fulfilling a nuclear programme that comprised a total of twelve reactors; but it was also decided that nuclear power should be decommissioned by 2010. The referendum result and the parliamentary decision on nuclear power were seen as a defeat for the anti-nuclear opposition and are seen as a turning-point in the history of Swedish environmentalism, leaving the environmental movement in a kind of vacuum (Eriksson et al. 1982; Jamison et al. 1990; Larsson 1984). Nuclear energy has not been a voting issue since the referendum (Hadenius et al. 1988:279, 291; Holmberg & Gilljam 1987:37; Westerståhl & Johansson 1990:18).[4]

In 1985, the Swedish nuclear programme was completed, which meant that twelve reactors were in operation, with a total power capacity of approx. 10,000 MW. The parliamentary decision of May 1991 on new general outlines for energy policy stated that nuclear power would be decommissioned, but the starting date and the speed of the phase-out were dependent on the results of economizing on electricity consumption, the production of electricity from environmentally acceptable resources and the possibility of maintaining competitive prices for electricity. Despite the fact that the decision on final decommission in the year 2010 is still in force, dependence on nuclear energy is rising and today nuclear power has become the major supplier of electricity in Sweden, accounting for about 50 per cent of total electricity production. Nuclear power proponents of today argue for a cancelling of the earlier decision to phase out nuclear power, stating that nuclear power is a cost-effective means of producing electricity and that nuclear energy has a unique role in the Swedish economy with its electricity-intensive export industry (see, for example, Södersten 1990).

### 3.3. The de-politicization of nuclear power

The referendum of 1980 illustrates the state's linkage to civil society. A referendum is, according to the Swedish constitution, consultative, i.e. a means for parliament to acquire knowledge about public opinion before an important decision. Consequently it is parliament that decides if and when a referendum will be arranged, but also the formulation of the voting question. The anti-nuclear opposition demanded two discrete alternatives – a clear-cut 'yes' or 'no' to nuclear power – but parliament ignored this, deciding that there should be three alternatives.[5]

Parliament did not consider the role of the public in policy formulation until nuclear power was critically questioned on a broad scale. This illustrates Urry's thesis of the state's linkage to civil society first and foremost through circuits of power and ideology, with law as the connecting medium. Connected to ideology is the Gramscian notion of hegemony (Gramsci 1971). However, the relation between the state and different social groupings is not automatically one of state domination by hegemony, and thus the question is rather how the state – and the economy – influences different social groupings to acquire hegemony in civil society.

Groups in civil society that were opposed to nuclear power, and the anti-nuclear parties of parliament, did not succeed in building a powerful policy network able to stop nuclear power. In Sweden there was no

formal and routine part of the policy process where opponents of nuclear power could attempt to influence or delay the nuclear licensing process, either generally or in relation to any individual plant. The policy process was thus not open to public participation, in contrast to the case in other policy areas (Sahr 1985:175). The Centre Party, with its anti-nuclear profile, then became a substitute for this lack, serving as a kind of 'safety-valve' for the expression of anti-nuclear opinions.

The Centre Party's anti-nuclear profile was the most important factor in its 1976 election success. Despite this, the Centre Party did not manage to change the nuclear policy, and the coalition cabinet, with the Centre Party as major party, had to resign because of the cabinet's internal tensions regarding nuclear power. The power bloc that had developed between the nuclear industry and groupings in the state in the course of three decades, and that the economy at large supported, was too strong.

The nuclear issue made people with quite different political sympathies and values unite in the struggle against the further expansion of nuclear power. The People's Campaign was to be seen as a strong public movement during the referendum campaign, but, as a result of the focus on the referendum, the movement did not manage to maintain its viability and member support after the referendum, any more than did other oppositional forces. People's support and involvement were thus de-mobilized and the environmental movement was left in a kind of vacuum (Eriksson et al. 1982; Jamison et al. 1990; Larsson 1984).

In the debate, the nuclear question was first and foremost perceived as an energy-political question on a national level, and discussion as to where to site the radwaste disposal was to a large degree excluded. Through the referendum and the subsequent parliamentary decision, the issue of nuclear power had been given a political solution, and the discussion on nuclear power largely faded out, both in parliament and in general. The problem of radwaste became depoliticized and scientized, managed by the nuclear companies, involving natural scientists and engineers in research and development, and regulated and evaluated by small nuclear agencies formally independent of the government. However, this may be drastically changed in the near future when nuclear companies have to select a site for radwaste disposal.

## 4. Radwaste management: A conflict postponed

The issue of nuclear power has had a unique effect on Swedish domestic politics, cross-cutting the traditionally very strong left–right cleavage in the party system, causing the dissolution of the first non-socialist government since the war, and being the subject of a referendum (Hadenius et al. 1988; Vedung 1979). However, this politicization lasted for only a short period – the 1970s – and since the referendum the nuclear question has not become a voting issue. The politicization of the nuclear issue during the 1970s seems not to have caused any deep change in nuclear policy as such. As Berkhout (1991:100) puts it, 'The unifying theme of policy-making in Sweden has been the will of a largely autonomous electricity-supply industry to bring nuclear reactors into operation'.

As in most countries in Western Europe and as in the USA, the political problem of managing radwaste arrived by stealth (cf. Blowers et al. 1991:247). The parliamentary commission on atomic energy (*Governmental Reports* 1956, No. 11) merely mentioned the safety question and did not touch upon the radwaste problem at all. In another governmental report of the same year, the radwaste problem received some attention, and the report stated that the radioactive waste was now a troublesome problem but that promising efforts were being made to find a use for it, e.g. to preserve food and to accomplish chemical processes (*Governmental Reports* 1956, No. 46). The questioning of nuclear power at the beginning of the 1970s focused on the societal consequences of nuclear energy (centralization and bureaucratization) as well as the fact that the issue of radwaste management was not solved, stressing the ethical dimension of the radwaste problem: is it moral to permit production of waste that needs to be stored in a very safe way during a time-span that

is beyond human understanding? By the Stipulation Act of 1977 (*SFS* 1977, No. 140) the coalition cabinet transformed the nuclear issue into one of safe radwaste management, where the law states that a 'completely safe' method for radwaste disposal needs to be shown for permission to start a reactor, [6] and in the referendum campaign the radwaste problem was excluded to a large extent. During the 1980s there was little debate on nuclear energy as such, except for a short period after the Chernobyl accident in 1986.

However, the tacit acceptance of nuclear power will perhaps change in the future. The head of the nuclear companies states that 'to locate the final disposal of spent nuclear fuel in a place in Sweden seems to be the most troublesome question' concerning nuclear power today (Bjurström 1990:178). In the middle of the 1990s when the nuclear power owners begin to select suitable sites for the repository, the questioning of nuclear power may well start again. And if no satisfactory and publicly acceptable solution can be found, then the continuing production of waste and consequently the ultimate future viability of nuclear power itself will be threatened (Blowers et al. 1991:1; Openshaw et al. 1989:18). From this perspective, the siting conflict is to be seen as a conflict postponed, a conflict that superficially appears to be a locational conflict but that in essence has its roots in the issue of nuclear power and nuclear policy as such (cf. Burns & Midttun 1987; Lake & Disch 1992).

### 4.1. The policy for radwaste management

The Swedish national policy for radwaste management is to be characterized by a far-reaching delegation of responsibility for it to the nuclear owners themselves, a delegation that fits in well with the owners' own desire (Carter 1987:300). The result of this is that all the important choices in Sweden's radwaste management have been taken by the owners themselves, always at some distance from the political establishment but with its tacit acceptance. The government has restricted nuclear power, not questioned it as such.

The basis of Swedish nuclear waste management is that Sweden should be independent of other countries for the execution of its nuclear waste management programme, that the best available technology should be used, and that no burden should be laid on future generations (Lidskog & Elander 1992). For spent nuclear fuel, no importation from other countries is allowed, direct storage is favoured, and it is to be disposed of on Swedish territory. The disposal system is to be chosen with due regard to aspects of safety, environment, and nuclear weapons proliferation.

According to the legislation (*SFS* 1984, No. 3), it is the owners of the nuclear plants who bear the responsibility for all steps necessary for the safe management and disposal of all radioactive residues from nuclear energy production. Radwaste management is done by the Nuclear Fuel and Waste Company (SKB), which was set up by, and is jointly owned by, the four owners of nuclear utilities, but it is the government that has the ultimate responsibility for the waste being disposed of in a way that is satisfactory to society. The costs of decommissioning nuclear power and financing radwaste management are to be borne by the nuclear utility owners, who pay an annual fee in respect of nuclear energy production to a long-term fund administered by a governmental agency, the Nuclear Inspectorate (*SFS* 1981, No. 669). Every year SKB presents a detailed cost calculation for the whole back end of the Swedish nuclear fuel cycle. The Nuclear Inspectorate examines this calculation and proposes to the cabinet the size of the fee for the year to come, a fee that is individually calculated for each plant according to its electricity production and radwaste management costs. This fee is based on strictly economic calculations, leaving social costs aside. Individual economic costs for the local population (e.g. devaluation of property) will not be compensated for either. Except for a limited addition of costs with regard to uncertainties associated with radwaste management, there is no calculation for costs that could arise from serious accidents in connection with radwaste management.

Furthermore, the economic responsibility of the nuclear power companies is limited. The legislation states that the

nuclear companies have full liability in the event of damage caused by nuclear activities, but that the state will cover third-party economic compensation above SEK 1,200 million (about USD150 million) in each case. This means that the state assumes that the insurance to cover all conceivable costs that might arise is too expensive for the reactor owners, for which reason the state needs to get involved and assume economic responsibility, in this way lowering the insurance costs for the nuclear reactor owners.

Who has the economic responsibility is also of great importance when the uncertainties in the calculation are to be judged. An illustrative example is the British proposal to privatize the energy sector, which involved a transfer of economic responsibility for misjudgement in the cost calculation from the state to the future private owners of the energy plants. This transference implied a dramatic rise in the estimated costs of decommissioning the nuclear reactors. In one case – reactors owned by the British Nuclear Fuels Ltd – the estimated costs rose from GBP438 million (March 1988) to GBP4,605 million (March 1989) (MacKerron 1990; Kårberger & Swahn 1993).

The fee for covering the costs of nuclear decommissioning and radwaste management is strictly connected to the delivered electricity, and it is today's consumers who have to pay the estimated costs of the implementation of the nuclear waste management programme. However, it will be future generations who will have to pay the social costs of disposal and the economic costs in the event of unforeseen serious accidents. From this perspective, radwaste management in Sweden, as in many other countries, can be seen as a transference of the costs of the nuclear industry to civil society, and this is done with the state's permission and regulation. The spatial dimension of radwaste management – a facility needs a specific place to be sited at – means that it is the local level and civil society that have to bear the major costs of radwaste management and nuclear power, whilst it is the economy that gets the major benefits. Thus radwaste management can be seen as the externalization of the economy's costs (cf. Douglas 1986; Kasperson 1983; Nelkin 1979), where the scale of nuclear power and the character of radwaste management are decided by the economy and the state while the costs are borne by civil society.

### 4.2. The spatial dimension of radwaste management

The local character of conflicts around radwaste management can be exemplified by a number of cases. The US experience generally supports the conclusion that conflicts often occur when policy acquires spatial dimensions and a specific local area is affected: political opposition to nuclear waste management develops when policy moves from general principles to site-specific proposals of location (Blowers et al. 1991:240). In Britain, since 1980 the history of radwaste disposal has been fraught with political opposition from, besides environmental groups, local authorities in whose areas possible disposal sites have been mooted (Kemp et al. 1986; Kemp 1990). The Swedish experience supports this conclusion too: in the early 1960s the first Swedish reactor (for research use only), located in a suburb of Stockholm, provoked a violent local debate, mainly concerning the health hazards of radioactive release during operation (Nelkin & Pollak 1977:341). During these years, AB Atomenergi showed an interest in siting a reprocessing plant for uranium and plutonium in Sannäs, but, after strong local mobilization, a unanimous council came out against it. In 1973 the State Power Board planned to site two light-water reactors and two breeder reactors on Brofjorden, but this was opposed by the local population, who collected 12,000 signatures. Shortly thereafter the municipality of Lysekil vetoed the plan (Noresson 1985). Since 1977 the nuclear companies have carried out exploratory drilling into bedrock to find a suitable place for the storage facility. The first test-drillings attracted hardly any attention at all, either from the media or from the public and local politicians. In 1980 the first confrontation took place, and since then new resistance groups have formed at each site (altogether some 15) to prevent the nuclear companies from test-drilling.

Thus it seems that – except for the nuclear debate of the 1970s – the major opposition has been to the *location* of nuclear power plants and to exploratory drillings at specific places, not to the policy as such. The spatial dimension of these conflicts is thus obvious. Civil society is substantially affected when the radwaste management policy acquires spatial impact, and consequently has to fight back in a reactive manner. The radwaste is to a large degree already produced, the policy is already formulated and only the implementation remains. This makes it easy to understand why the failure to coordinate policy formulation with policy implementation has generally been the main obstacle to the achievement of compliance regarding hazardous waste regulation (Kamieniecki & Cohen 1990).

The spatial dimension is not only a feature of siting conflicts. It is also crucial in the gaining of a common identity by civil society. A collective consciousness is most often to be seen as a socio-spatial consciousness, and the common identity of civil society can be based both on people's belonging to a social class and on their belonging to a place or spatial territory. Local consciousness derives from shared knowledge and shared experience of both social and geographical environment and from local history. Thus localism, belonging to a place, seems to be an important dimension in gaining a shared local identity (Cohen 1982; Ekman 1991; Paasi 1992; Thrift 1983).

Situated at the interface between the state, the economy and civil society, the municipality has a crucial role to perform when it comes to conflicts around radwaste management. The old tradition of local self-government in Sweden gives the municipalities a wide scope of discretion regarding their own territory (Elander & Montin 1990). Thus, until recently, nuclear stations and nuclear waste facilities were not allowed to be located against the veto of local government. However, in 1990 the local veto was revised, not now enabling a municipality to stop an 'installation of major national interest'. This highlights the dual role of the municipality with its local self-government. Thus local authorities cannot be used just as instruments for the implementation of central government policies, and this gives local authorities the potential for being allies, or even spokesmen, of local opposition groups. Local government is to be seen as an arena for different institutional claims, and the municipality is 'simultaneously "antennae" of central government and a "voice of the periphery"' (Miliband 1969:52–53).

## 5. Future perspectives: The importance of place

Because of the connection between radwaste management and the licensing of nuclear power stations, and the demand to demonstrate 'completely safe' final storage, the SKB research focused from the beginning on engineered barriers. It was easier to prove a safe disposal in principle, demonstrating only the engineered barriers, than to investigate a site and have to prove the completeness of the geological data. Thus the focus of the SKB research is on showing that the radwaste problem is solvable in principle, giving specific site characteristics low priority (Berkhout 1991:127). In line with this general orientation of its research, SKB has not yet taken any definitive decision either on choice of method or on choice of place. However, the time for the selection of method and location is approaching. SKB plans to make pre-investigations in five to ten municipalities, and thereafter select two of these municipalities to make a detailed characterization during 1994–97. One of these two sites will then be selected for further investigation and in 2003 SKB will apply to the cabinet for siting permission, the construction of the site will start in 2005, and in 2008 it will receive its first consignment of high-level waste. Finally, in 2060 the site will be sealed. The municipalities of Storuman and of Mala – both located in the northern part of Sweden – have invited SKB to make pre-investigations.

It is urgent for the state to find a suitable site. In doing so it will be possible to continue with nuclear power and ensure radwaste disposal that is as safe as possible. By delegating radwaste management to the nuclear reactor owners, the state has contributed to a depoliticization of radwaste

management and nuclear power. If this depoliticization succeeds, it implies that the question of radwaste management is perceived as a technical and local issue without any significant political dimension at the national level. This fits in with some researchers' emphasis on the importance of not politicizing this issue in order to make a siting possible (see e.g. Openshaw 1988), but also with the attitude of the nuclear reactor owners themselves. By arguing that nuclear power and radwaste management have to be treated separately and by stressing the technical dimensions of radwaste management and disposal, the nuclear companies support a depoliticized view where radwaste disposal is perceived as a technical and local question (see, e.g., SKB 1992a; SKB undated a, b).

Most important is the future reaction from the affected local population, from civil society. Civil society consists of heterogeneous and conflictual social practices and interests. Thus important questions are: Who will attain hegemony in civil society with regard to this issue? Will there be major opposition to a planned radwaste disposal or will the disposal be welcomed? To what extent will the interests of the state and of the economy take precedence in establishing hegemony in civil society?

### 5.1. Radwaste disposal – contribution to employment or threat to human existence?

The reproduction of civil society includes its economic and material reproduction, and in capitalist society paid work is most often a prerequisite for this. Civil society is consequently in need of work opportunities, which depend both on the economic situation in the country and on local and regional circumstances. From this perspective, the local economy is important for civil society. This dependency is the basis for the establishment of 'nuclear oases', i.e. places where nuclear facilities or waste already exist and where disposal is welcomed. Examples of this are Sellafield in Britain, which provides 11,000 jobs in an area of few job alternatives, and Hanford in the United States, where local enthusiasm for a radwaste repository is overwhelmed by state-wide hostility, which is particularly concentrated in the big cities of Seattle and Spokane (over 200 miles away) (see, e.g., Blower et al. 1991:xviii, 326). A Swedish example of this is the municipality of Oskarshamn: it hosts three nuclear power stations and intermediate storage for highly radioactive waste, and it has now been chosen for the location of the plant where the spent nuclear fuel will be encapsulated in copper canisters. Oskarshamn has also shown an interest in hosting the final storage for high-level radwaste. A similar example is the municipality of Arjeplog, which – four days after receiving the news that its main industry (mining) would close down – announced its willingness to be a candidate for the siting of radwaste. SKB also emphasizes the creation of employment opportunities, stating that 'deep storage is a qualified facility for environmental protection which may make a major contribution to local development and employment' (SKB 1993); and, according to SKB, the disposal will create 250 employment opportunities (lasting for thirty years) directly, and might create two to three times as many indirectly.

However, the basis of civil society is not only the material needs of human beings, but also their cultural and social needs, which implies that civil society is dependent on but not one-sidedly determined by the economy (Urry 1981:102). In Kynnefjäll, the local population has for more than thirteen years kept a constant watch on the roads in the area, ready to obstruct SKB's plans for exploratory drillings. The local councils of the three municipalities to which the area belongs unanimously support this struggle. This is despite the need for work opportunities in the region. In this case, the municipality promotes social needs over economic needs.

Thus the civil society may see the siting of a radwaste disposal facility as supporting or as threatening the reproduction of civil society. In some cases the local population may perceive radwaste disposal in a positive manner, stressing the work opportunities it provides. In other cases, the local population may see a disposal facility as threatening not only biological and social reproduction (being perceived as an extraordinary hazard to human health and exist-

ence) but also material reproduction: a siting could mean that other industries would move away and that the local area would not be considered attractive for the location of other kinds of industry. The discussion in Arjeplog concerning to what degree a radwaste repository would affect the municipality's tourist industry is an illustrative example of this (see, e.g., *Arbetaren* 1992; *Greenpeace Newspaper* 1992). Furthermore, a radwaste repository does not necessarily promote the interests of local industry; it could also pose a threat to it. Therefore, as shown by Allen (1992), local industry can be a major opponent of planned disposal.

### 5.2. The pre-investigation of the municipality of Storuman

These complex and conflictual interests are well illustrated in recent events in SKB's search for suitable sites. In October 1992, SKB sent a letter to all municipalities informing them of SKB's radwaste policy and planned pre-investigation. This study will involve investigations concerning systems and technology, transport, geoscience, social planning, socio-economic issues, environmental and safety issues, and local cooperation and information. In the letter the municipalities were invited to get in contact with SKB, which some did. The local board of Storuman (in June 1993) and the local board of Malå (in November 1993) have invited SKB to make pre-investigations. On 28 September 1993, Storuman and SKB signed an agreement that stated that during the period October 1993 to March 1994 SKB would make a pre-investigation of the conditions in respect of siting a deep disposal facility in Storuman. In the agreement it was explicitly stated that if acceptable labour were available locally SKB pledged to make use of it in the pre-investigation. If the pre-investigation finds the municipality to be suitable, the local board will arrange a consultative local referendum concerning deep disposal of radwaste.

The creation of employment opportunities was emphasized in the discussions preceding the decision of the local board. However, the decision has been vigorously discussed and criticized by parts of the local population in the municipality. A local opposition group – the Action Group Against Atomic Waste in Storuman – has stated that, if the pre-investigation shows that the municipality is suitable, the local board will never say no to hosting the disposal facility, because of economic and employment considerations. However, another action group has been formed consisting of local private companies – the Action Group of Trade and Industry for Lasting Economic Growth – which has the explicit aim of providing positive information concerning radwaste disposal and thus counterbalancing the actions of the opposition group. However, not all parts of industry in the municipality are in favour of the pre-investigation. People engaged in the tourist industry in the northern part of Sweden have formed a network against radwaste disposal in the region.

### 5.3. The spider in the web: the municipality

Future reactions from the local population affected depend on how the social and spatial dimensions of civil society are to be elaborated. If a spatial identity of the civil society develops, a hegemony could be established that is not based on the interests of the economy or the state. However, it is an empirical question whether this implies that the civil society at the local level will become a proponent or an opponent of a radwaste disposal. This depends on what forces and interests attain hegemony in civil society. If civil society opposes a planned radwaste disposal, this struggle could deepen their identity. Through 'extra-local events' – for example test drillings and detailed investigations against the population's wishes – the local consciousness and the spatial dimension of civil society could be strengthened (Cohen 1982).

If an oppositional attitude attains hegemony in civil society, the local council may support it. In that case, the legitimation conflicts will occur not between the local population and the local authorities, but between these two and the central state. Or, as an old man living at Kynnefjäll put it: 'If the municipal veto is taken away, you will not only have civil

disobedience, but also municipal disobedience' (personal communication to the author).

This view fits in with the recent emphasis of some researchers on local self-government as a missing link between civil society and the state (Elander & Gustafsson 1993). Analytically, a municipality, with its relation to the state established by legislation, is to be seen as belonging to the sphere of the state. At the same time, it is important to note that, where there is a considerable degree of local self-government for the municipality – as in Sweden – there may be a great opportunity to formulate standpoints that are contrary to those of the state. At least in judging the actions of the municipality it is important not to see it *a priori* as a 'local state', i.e. an extension of the central state. A developed local self-government is neither to be regarded as simply belonging to the state, nor to be regarded as belonging to civil society (Montin 1992). Rather, it is like a spider at the centre of the web interconnecting civil society, the state and the economy.

Like the state, the municipality needs to ensure continuing capital accumulation on its own territory and strives to achieve a good labour market. The municipality is dependent not only on the economy, but on the state and civil society as well. The municipality belongs to the national political structure and is thus dependent on the state (Elander & Montin 1990). Basing its legitimation on support from the local electorate, the municipality has to take civil society into consideration. Failing to do this may create a deep and long-lasting distrust among citizens towards local government, as was the case in the former socialist countries in Eastern Europe (Elander & Gustafsson 1993).

The mutual dependence between the spheres of civil society, the state and the economy means that the municipality will be tied between these different interests. The nuclear companies and the central state will make efforts to get support for a site, especially from the selected municipality and civil society. Different information initiatives, which intensified during 1993, and the depoliticization and scientization of radwaste management are means to gain support and prepare people for the coming radwaste disposal (Lidskog 1993b). For civil society, in which human beings are reproduced materially, socially and culturally, the important question is what interests will establish hegemony. With today's recession in Sweden, conditions exist for the economy to establish hegemony in civil society. A strong and viable common identity of the civil society will then be required to take precedence over the economy in establishing hegemony.

## 6. Concluding remarks

Nuclear policy in Sweden was formulated and established during the late 1940s and the beginning of the 1970s through intimate cooperation between the nuclear industry and the state. In the early 1970s the first critical questioning of nuclear power appeared, articulated by a small group of researchers and politicians. When the nuclear issue was politicized during the 1970s, all political parties integrated it in their party programmes and a People's Campaign Against Nuclear Power emerged. However, despite this politicization, the nuclear issue was removed from the political agenda by the referendum During the 1980s nuclear power was rarely questioned.[7]

Despite the fact that radwaste was used as one of the major arguments against nuclear power in the 1970s, and despite the cabinet's transformation of the nuclear power question into one of safe radwaste management (by the Stipulation Act of 1977), radwaste management has not caused any large public debate on the national level. Instead radwaste management has been put forward as a technical and scientific question, leaving its political dimensions aside. At the same time, SKB has faced local opposition in all the places where it has made exploratory drillings (Åhäll et al. 1988). This local opposition is understandable for two reasons: first, the depoliticization of radwaste management has caused the issue to be interpreted as a technical one with a *local* solution; secondly, civil society is a social and a *spa-*

*tial* concept, and it is first and foremost when civil society faces a planned siting that it is activated. If one stresses the spatial dimension of civil society, the municipality emerges as having a dual role in this conflict. On the one hand, the municipality is to be seen as a 'local state', on the other hand, it is to be seen as representing the civil society. Indeed, the municipality is located at the crossing of the spheres of civil society, the state and the economy.

On the eve of the siting of Swedish radwaste, the role of the municipality is therefore crucial. Will it adapt to the interests of the state and the economy or will it try to oppose a planned site? And to what extent does the municipality's attitude affect SKB's choice of siting? The nuclear industry and the government have three management options in their search for radwaste sites (Solomon & Cameron 1985). First, they can send their waste to the existing nuclear oases where further facilities may be welcomed. Second, they can store the waste at the existing nuclear plant sites for the foreseeable future. Third, they can attempt to secure new waste facilities. The present concentration on pre-investigations seems to indicate that SKB will choose the third alternative. However, it may well come to choose the first alternative. In its latest research and development programme (SKB 1992b, c), which in September 1992 was delivered to the Nuclear Inspectorate for evaluation, it states that from a logistical point of view the municipality of Oskarshamn is to be seen as a main alternative. Oskarshamn is the municipality where three nuclear reactors and the interim storage for spent nuclear fuel are located and where the encapsulation of the radwaste will be performed. The R&D report explicitly states that if suitable geological conditions are found in the vicinity of the intermin storage of spent nuclear fuel, it may be selected as one of the two sites where detailed investigations will be made. If, then, the repository for spent nuclear fuel were to be sited in the municipality of Oskarshamn, the nuclear companies would minimize transportation costs (all high-level radwaste would be temporarily stored in Oskarshamn for a period of forty years), and the prospects of erasing strong land-use opposition seem to be good. This choice represents the line of least resistance, a line some researchers (e.g. Carter 1987; Openshaw et al. 1989) advocate in their proposals for geographically remote disposal sites and which the USA seems to be following by its decision to investigate the Yucca Mountain in Nevada as a suitable area for radwaste disposal (Solomon & Shelley 1988). In Sweden, as in other countries, the nuclear industry and the government always have the option of retreating to nuclear oases for the disposal of nuclear waste (cf. Blowers et al. 1991:320).

However, a proposed site may give rise to resistance from the civil society. If oppositional forces attain hegemony in civil society, it will perhaps not be the state that will play the main role in radwaste management, as Berkhout suggests (1991:230), but the municipality and civil society.

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**Notes**

[1] Against the background of Marx's perception of civil society (*burgerlische Gesellschaft*) as little more than the economic base, so that other parts of civil society constitute a residual category, sociologists such as Cohen (1983), Cohen & Arato (1992), Gouldner (1980), Gramsci (1971) and Urry (1981) forcefully argue that the economy has to be separated from civil society in analysing the modern capitalist society, so that the social and political dimensions of civil society come into focus.

[2] To portray civil society, the state and the economy in action terms seems to be a kind of reification. Of course societal spheres do not act, but in this article it simply represents a shorthand way of referring to a set of identifiable social processes and practices. For a further discussion, see the Introduction in Mouzelis (1975).

[3] The role of the political parties in this study circle campaign should not be underestimated here. For example, the study material of the study organization ABF, which belongs to the Social Democratic Party, was prepared in the headquarters of the Social Democratic Party (Sahr 1985:44).

[4] Here should be mentioned that Sahr (1985) has made an alternative interpretation. The public debate, the political parties' inclusion of the nuclear issue and the referendum made the politicians decisively change the energy policy in Sweden. By this Sweden became 'a partial exception to the "energy syndrome" ' that, according to Sahr, was dominant in other countries. Thus the nuclear debate implied a drastic change of former prognoses, which had been based on the assumption of increasing energy consumption in Sweden.

[5] The Waste Network – an informal network between different local groups opposing exploratory drilling in their respective areas – stated that the referendum was to be seen as 'yet another demonstration of political manipulation and lack of honesty' (Åhäll et al. 1988:31).

[6] In 1984 the Stipulation Act was replaced by the Act on Nuclear Activities (*SFS* 1984, No. 3). The demand for a '*completely safe*' method for final disposal of spent nuclear fuel was here revised to a demand that reactor owners now had to 'demonstrate that a method exists for the handling of and final disposal of spent nuclear fuel and radioactive waste . . . that *can be approved* with respect to safety and radiation protection' (my emphasis).

[7] The months after the Chernobyl accident in 1986 constitute the only exception to this. However, the Chernobyl accident paradoxically seems to have strengthened Swedes' trust in nuclear power, perhaps by contrasting 'bad nuclear management' in the former Soviet Union with 'responsible nuclear management' in Sweden (Westerståhl & Johansson 1990).

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