An Example of a "Managed Transition": The Transformation of the Waste Management Subsystem in the Netherlands (1960-2000)[1]

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[1] The contribution is based on the MERIT-ICIS project "Institutional change in the transition of waste management in the Netherlands" for the NWO research programme "Milieu en Economie". It draws on contributions of Derk Loorbach and Saeed Parto.

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The contribution by Joachim Hafkesbrink deals with a very interesting issue: transition management in the electronics industry innovation system. It is about an issue in which I take a great interest as someone who developed the concept of Transition Management together with Jan Rotmans for the Dutch national government.[3] The issue concerns *the extent to which system innovations and transitions offering sustainability benefits can actually be managed by public decision-makers through public policy.*

In his contribution, Hafkesbrink says that the transition towards recycling of electric and electronic equipment waste was managed through two acts of European legislation, the WEEE and RoHS Directives. Rather than discussing transition management in the electronics industry innovation system about which I know little, I would like to offer a discussion of a 'managed transition' about which I do know something, namely the transformation of the Dutch waste management subsystem in the 1960-2000 period. It is an interesting story of a transformation process which was managed through various acts and through a newly created organisation, the Waste Management Council (Afval Overleg Orgaan, AOO), which acted as a change agent and mediator but, as I will argue, could only do so because of special circumstances described in the contribution (acute waste management problems at a time of waste scandals when there was agreement about the waste management hierarchy). In this

[3] The approach of transition management is described in [4, 6, 7, 8, 12, 13].

contribution I take issue with the idea that a transition can be managed by a policy act.

During the past 40 years, the Netherlands experienced a transformation in waste management: from uncontrolled landfilling (waste dumping) towards a differentiated waste-handling system of recycling, incineration with energy reuse, and controlled landfilling. It is unclear whether this transformation has ended — changes at the European level (the disappearance of waste borders) may lead to further change (even backwards) — which is why I will talk about transformation and not about transition.

In some ways the transformation meant a return to the old practice of recycling. 150 years ago, recycling was a common practice in the Netherlands: glass, metals, old fabrics, and certain types of organic waste were being collected by individual traders ([10]). At the end of the 19th century, such activities became less economical, and more and more private entrepreneurs stopped collecting waste. The "schillenboer" with his horse collecting shells of vegetables no longer exists. Waste collection became a public task handled by municipalities.

Most of the waste (including rising quantities of chemical waste) was being landfilled; a small part was reused or incinerated in newly built incinerators. In 1912, the first incineration plant was opened in Rotterdam, while Amsterdam and Leiden followed in 1918 and 1914 respectively. In Den Haag, in 1918 a small incineration plant was opened which even generated electricity on a small scale. The incinerators were built in urbanized areas lacking landfill sites in the vicinity.

Waste was also used for filling swamps and ditches ("slotenrijden") to generate new land for settlements. No track was kept of the types of waste having been disposed. The Netherlands basically had an uncontrolled waste management subsystem, in which waste was disposed of with few environmental considerations. The principal issue was to get rid of waste.

In the 1970ies, waste and unsustainable waste management practices received increasing attention: concerns were raised about how waste was being managed, problems arose with creating new landfill sites (because of local resistance), and the 1972 report to the Club of Rome followed by the oil crisis in 1973 put attention to scarcity of materials.[4] Waste disposal was increasingly seen as a problem.

Special legislation for waste was passed and responsibilities were given to provinces. With the introduction of the *Hazardous Waste Act* (1976) and the *Waste Act* (1977), the Dutch provinces received the planning and coordinating tasks, while the implementation, to a large degree, remained with (cooperat-

[4] For Ad Lansink, the inventor of the waste management hierarchy (which became widely known as the "ladder of Lansink"), a direct link between raw materials and energy existed. As he said: "The Club of Rome report really established this link for me because it talked about a shortage of not only raw materials but also of energy. I felt that waste was potential raw material for energy generation." (interview with Lansink by Parto, Feb. 17, 2004).

ing) local authorities (collection and disposal). The reason for this change in responsibilities was the intention to put an end to the (uncontrolled) dumping on landfills and to benefit from economies of scale for incineration.

Provincial borders were closed for waste transports and the operators were given the exclusive right and obligation to collect waste in a certain region. Operators were guaranteed necessary supply (*processing certainty*), and transporters had a guaranteed demand. The activities were organized as municipal service, controlled by local politicians officially in control, responsible for funding (from `www.aoo.nl`). Central to policy thinking was the "waste hierarchy" proposed in the parliamentary motion of Ad Lansink in 1979. The waste management hierarchy covered the path from prevention, through re-use (of products), recycling (of materials), and incineration (with energy-production) to landfilling as the last option. The motion became law in 1986 and was an important cognitive institution ([11]). From the late 1970ies on, waste was increasingly seen as "a waste of resources" in polity. Business also started investigating ways to reduce waste as part of its environmental policy.

To reduce the volumes of waste for disposal, the Dutch government opted for a *differentiated waste-stream* approach in which certain types of waste (notably paper and glass) were singled out for recycling. The initial reluctance to adopt the separate waste system came from the municipal waste-collecting services that had to change their practices. Other actors, like NGOs and private businesses, performed new activities such as the collection of paper and glass. The systematic collection of the bulk of recyclable waste and organic materials would only become institutionalized in the 1990ies ([11, p. 7]).

Despite these attempts for upgrading waste practices, many activities in the area of waste management still suffered from their small-scale nature and from inadequate environmental protection. For example, up until the 1990ies, soil protection measures were absent in virtually all landfills and flue gas scrubbing in waste incineration facilities was inadequate (from `www.aoo.nl`). There was considerable political and community resistance to the construction of new landfills and incineration plants, with the resistance reaching a high peak in the 1980ies, following the discovery of leaking landfills (Vogelmeerpolder) and contaminated land (Lekkerkerk and Griftpark). Waste scandals were a frequent news item in the 1980ies. The two most important ones were: Lekkerkerk, in which it was discovered in 1980 that new houses had been built on soil containing chemical waste which had been landfilled, and Lickebaert, where in 1989 dioxins (coming from incinerators of AVR and AKZO) were discovered in the milk of grazing cows. Five waste incinerators were closed because of dioxin emissions and at least one plan for a new landfill (Does in Leiden) was abandoned because of opposition. Whilst capacity was decreasing, waste volumes kept growing, leading to capacity problems. In 1991, as a result of lack of regular waste management capacity, it even became necessary to store waste in push barges.

At the end of the 1980ies, the Dutch waste management system was in a state of crisis. The system was reviewed by the Landelijke Coördinatie Com-

missie Afvalbeleid (Commissie Welschen) in 1989 which concluded that "the current organisation is fragmented, dispersed, and small scale". It argued for the creation of a nationally oriented organisation for disposal, to manage overall waste volumes and keep disposal costs under control. For incineration, but also for organising waste management from cradle to grave (chain management), four waste regions (encompass several provinces) were envisaged, each with three to four million inhabitants (from `www.aoo.nl`). This advice led to the appointment of the AOO through the Co-operative Agreement for Waste Disposal VROM/IPO/VNG (1990). The AOO would play an important role in the modernisation of the waste system.

From the beginning there were problems with the four waste-regions system. Municipalities wanted to sign contracts with waste companies in other regions and, because of capacity problems, waste had to go to other regions for incineration. In 1996, upon the advice of the Commission Epema, it was decided to centralise the responsibility for waste control at the national level. The legal basis for the centralisation is the last amendment of the Environmental Management Act that came into force in May 2002. Especially efficiency considerations fostered this decision. The centralization was welcomened by new private collecting and transport companies which wanted to operate nationally.

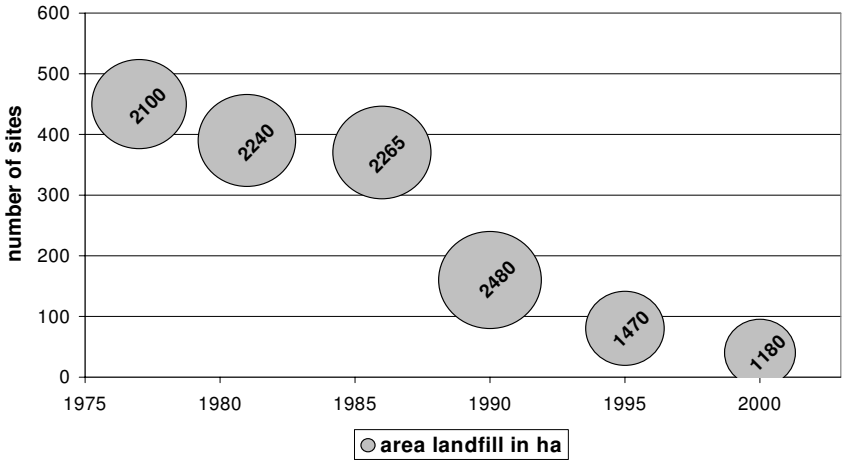

Fig. 1: Source: AOO

In the 1977-2000 period, the number of landfill sites fell from 450 to 40 (an eleven-fold decrease) thanks to the differentiated waste-stream approach and targeted policies (such as the packaging covenants), the landfilling ban of 32 waste streams, and steadily increasing costs for landfilling, creating an incentive to move up on the "waste ladder". The amount of waste being landfilled

fell from 14 Mtons in 1990 to five Mtons in 2002, a reduction of nine Mton. Today, all landfills have advanced systems of soil protection and methane extraction. Meanwhile, the capacity of incineration increased gradually, from 2.2 Mtons in 1980 to 4.9 Mtons in 2000. Between 1995 and 2000, incineration capacity increased by 2 Mtons. Recycling almost doubled between 1985 and 2000 from 23.5 Mtons to 45.3 Mtons of material.

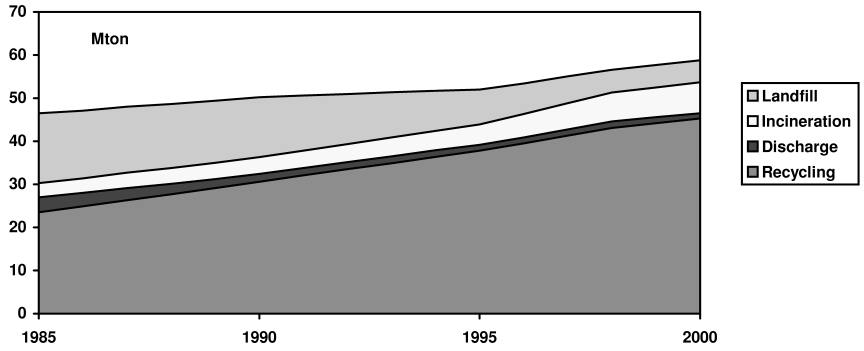

Fig. 2: Source: AOO

Multilevel Interaction Processes

The transition to a system of recycling and increased incineration with controlled landfilling as a last resort option is often viewed as the result of policy. Such a view, although not wrong, overlooks that policy itself was the result of various changes: the growing volume of waste, the waste scandals in the 1980ies and early 1990ies, and changes in beliefs (such as the belief that waste is "a waste of resources" and that landfilling should be done in a hygienic manner and only be used as a last-resort option) in a period in which environment was very much on the people's mind. The waste scandals helped to close down old incinerators and build better ones. Various waste acts provided the basis for policy and the AOO, created in 1990, brought together the three layers of government (local, provincial, and central) to work in a joint policy network without clear legal status under an independent chairman.

The AOO played an important role in the transformation process. Negotiations between different layers of government and with private waste companies took place within the AOO, with the actors agreeing on the general direction of creating a modern and efficient system of waste management with less waste being landfilled. The environmental movement, while being officially opposed to incineration, did not create too much trouble because its supporters understood that high costs of advanced incineration systems necessitated a high tax

for landfilling of burnable waste[5], which encouraged waste prevention and recycling. The waste companies welcomed the greater scale at which they could operate. For the AOO, the reorganization of the sector, with big companies from North America such as Waste Management Inc and BFI taking over small companies, was seen as a blessing. The big companies were committed to full compliance and had a strong incentive to respect the law.

A simple causality analysis disclosed that not a single driver was responsible, but that several drivers influenced each other. Packaging policies and the rising costs of waste management were influenced by other factors (growing waste volumes and opposition to landfills). Waste scandals (due to past waste practices) were an important aspect, allowing policy makers to modernize the waste management subsystem. Furthermore, the investments in incineration capacity are an important influence by necessitating a regular supply and policies to secure this (such as bans and a high landfill tax for burnable waste). Within the waste regime, the rule system and the roles of the different actors changed. Policy was thus endogenous, a response to immediate issues. To deal with problems of capacity, a new network organization (AOO) was created, which served as an important coordinator. The AOO is viewed by outsiders (such as Geelhoed in a speech at the AOO lustrum conference in 2001) as an example of the "poldermodel" of consensus-based politics, but the organization rather considers itself to be a change agent and mediator (Daemen and Huisman from AOO in an interview with Loorbach and Kemp, 7-9-04). The transformation can be viewed as successfully managed, but it also may be criticized for being overly expensive by relying so much on incineration and recycling ([5]).

Implications for Transition Management

What do we learn in terms of transition management? To me, this example teaches us three things. First of all, it shows that a transition or transformation cannot be controlled in any simple way. Different developments have to come together and to sustain each other. Secondly, it is useful to have a more or less commonly shared long-term orientation serving as the basis for coordination. Without this, policy can only react to immediate problems (act in a 'fire-brigade' fashion of putting out fires). Thirdly, since policy is problem-driven, you need acute problems for creating new institutions and for initiating changes which are helpful also for the longer term.

The idea of exploiting existing problems in a strategic way is a central element of the model of transition management outlined by Rotmans, Kemp, and Loorbach in various publications, which is currently being used in the Netherlands for managing transitions to sustainable energy, sustainable mobility, sustainable agriculture, and sustainable use of resources. The basic

[5] In 2002, the landfilling tax for burnable waste amounted to 79 euro per ton (62% of the price to be paid).

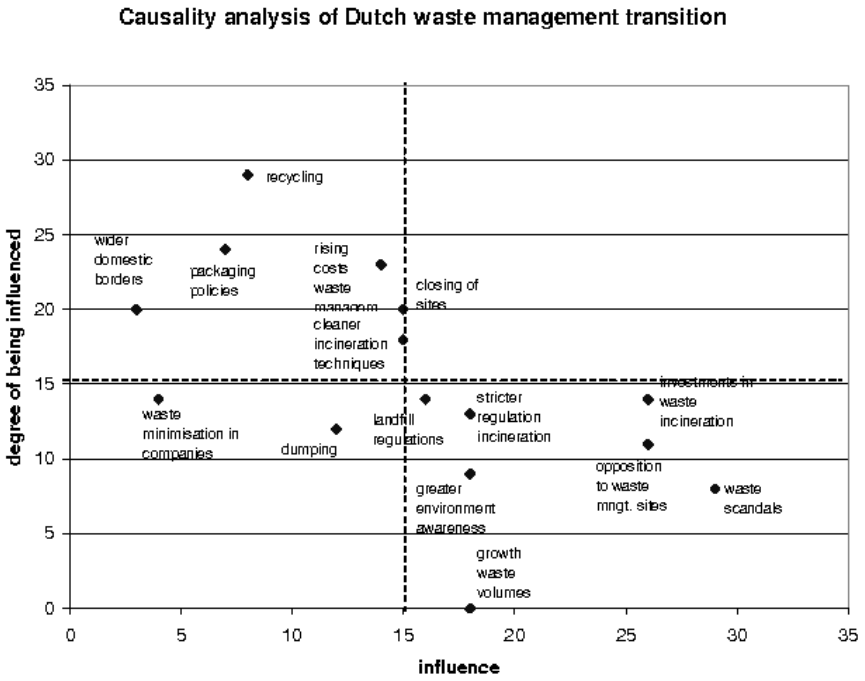

Fig. 3

steering philosophy is that of *modulation*, not dictatorship or planning-and-control. Transition management joins in with ongoing dynamics and is built on bottom-up initiatives. Windows of opportunity are exploited in a strategic manner. Transition management for sustainability tries to orient societal dynamics to participatorily defined sustainability goals for functional systems. Learning, maintaining variety, and institutional change are important policy aims.

The Dutch transition approach is innovation-oriented and very much bottom-up with long-term visions guiding societal experiments. To avoid lock-in adherence to certain paths, various paths are explored simultaneously. This makes sense given the uncertainty about the best option. In doing so, Dutch authorities rely on the wisdom of variation and selection processes rather than on the 'intelligence' of planning. Transition management is iterative and adaptive. A mechanism of self-correction based on policy learning and social learning is part of it. Through the various elements (programmes for system innovation, creation of transition agendas, the use of transition arenas) transition management offers a framework for policy integration, helping different ministries to collaborate. Whereas other countries are engaged in managing transitions in an implicit way, the Netherlands do so explicitly. The commitment to transition allows for cooperation between ministries, but also for

political choices which are needed for leading production and consumption closer to sustainability. It is not a substitute, but a new framework for politics.

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