Putting the Ecological Modernization Thesis to the Test:

*The Promises and Performance of Urban Recycling**

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INTRODUCTION: TESTING THE ECOLOGICAL MODERNIZATION THESIS

In this paper, we challenge one of the core hypotheses of ecological modernization theory: that the design, performance and evaluation of processes of production are increasingly based on ecological criteria, in addition to economic criteria [Mol, 1995, 1996; Spaargaren, 1997; Spaargaren and Mol, 1992]. Ecological modernization theory has quickly captured a substantial following among environmental sociologists in Europe [Spaargaren, 1997; Mol, 1995, 1996; Spaargaren and Mol, 1992] and increasingly in the United States [Cohen 1998; Sonenfeld 1998].

Proponents of the ecological modernization theory have been critical of other streams of environmental social science for focusing narrowly on the capitalist character of production, thereby ignoring much of the more robust and ecologically driven industrial aspects of production. In contrast, ecological modernization proponents have argued from a meso-level institutional analysis. This approach gauges the extent to which the ecological sphere has become an independent sphere in corporate decision-making. Mol, for example, proposes that there are three analytic spheres, each of which is really a network characterized as a social system "in which actors engage in more or less permanent, institutionalized interactions" [63]. The three spheres are:

(1) policy networks that concentrate on industry-government relations using a political-administrative perspective;

(2) economic networks that concentrate on economic interactions via economic rules and resources between economic agents in and around an industrial sector; and

(3) societal networks that concentrate on the relations between the economic sector and civil society organizations.

Ecological modernization theorists have sought to demonstrate that, within each network, there are significant environmentally-induced institutional transformations [Mol 1995].

Ecological modernization theorists argue that industrial society entered a new era in the 1980s [Spaargaren, 1996]. As in previous eras, this one is marked by new technologies, innovative entrepreneurs, and farsighted financiers who are bringing about a "new wave of industrial innovation" [Spaargaren, 1996:17]. This period, referred to as reconstruction, is marked by the emergence of an ecological sphere that makes a difference independently from the other three spheres above. In perhaps the most concise statement, Arthur P.J. Mol argues:

(T)he ecological modernisation theory focuses on the growing independence, 'emancipation' or empowerment of the ecological perspective or sphere from the basic three analytical spheres or perspectives in modern society: political, economic, and socio-ideological or societal [1995: 64];

To the extent that this is true, then we can state that the environment has been emancipated from these other spheres, and is beginning to constitute its own sphere -- hence, *ecological modernization*. Thus, Sonnefeld [1998] notes that: "ecological modernisation is both a theory of industrial change and a 'normative theory' or 'political program' " [Spaargaren and Mol, 1992; Mol, 1995]. As a theory of industrial change, ecological modernisation suggests that we have entered a new industrial revolution, one of radical restructuring of basic production processes along ecological lines [ibid.]. As a

political program, ecological modernisation advocates resolving environmental problems through "harmonizing ecology and economy" [Simonis, 1989], through "superindustrialization" rather than de-industrialization [Spaargaren and Mol, 1992].

In this paper, we use the example of post-consumer waste recycling to challenge these theoretical-political assumptions. Recycling is an interesting example, because one would expect it to be an ideal case of ecological modernization. Remanufacturing post-consumer waste into new products should represent a shift by waste firms towards an ecologically-sustainable form of waste processing. We argue that in fact recycling did originally emerge in the 1960s as a social movement with a strong ecological basis. However, we trace how it quickly became transformed into an industrial practice with narrow market interests. Contrary to ecological modernization theorizing, recycling started as a low-technology practice with an emancipated ecological sphere. As new technologies have brought firms and financiers into the marker, however, the ecological sphere has been recaptured and subsumed under the economic sphere. We offer three critiques of ecological modernization arising from our case studies:

•First, there is no compelling evidence that the environment has been emancipated from the economic in decision making criteria. In fact, recycling demonstrates the robust character of capitalist production in at least two respects:

(1) the ability of market criteria to dominate the agenda, even in the face of strong public support for ecological protection, and

2) the inability of ecological interests to penetrate organizational logics even when market opportunities exist.

•Second, the modernization of recycling appears to lead only minimally to a very narrow set of ecological gains. There is some reduction of natural resource withdrawals as virgin materials are replaced with recycled materials. These gains,

however, come at the expense of more ecologically-sound forms of waste disposal. Recycling tends to drive reuse programs out of the marketplace. We refer to this as a quantitative gain at the expense of qualitative outcomes. Furthermore, this form of "modernization" has brought workers into closer contact with environmental hazards. Workers sorting recyclables have to function in increasingly unsafe conditions, marked by close contact with biohazards and other toxic substances. Thus, there is an increase in environmental risks for workers along with some reduction in natural resource withdrawals.

•Third, even if we were wrong on the first two accounts, ecological modernization is focused on the wrong part of the social process. The trajectory of recycling has negative social equity concerns. We argue that any social theory that purports to account for social process has to incorporate issues of social equity and political-economic power. Ecological modernization was early criticized for not being able to adequately deal with equity issues in the developing world. We argue that ecological theorizing has the potential to bypass social equity issues in the developed world, as well.

In the sections that follow, we examine recycling as a potential model of ecological modernization. We begin with a overview of the recent history of the modernizing recycling sector. We follow with an in-depth examination of recycling in Chicago, to document what social processes modernization actually creates. While case-based research always leaves itself open to the critique of generalizability [Ragin 1987], we primarily use this case to dimensionalize and problematize a major claim of ecological modernization theory. We selected the modernizing recycling industry in Chicago, because it represents that sort of program that is becoming commonplace in

major urban areas. The case emerges from a larger research effort [Schnaiberg, Weinberg and Pellow, 1998; Weinberg, Pellow and Schnaiberg,1998], where we have systematically examined a variety of recycling programs that are emerging in the United States. Ultimately, we will leave it up to the reader and future empirical research to draw conclusions about generalizabilty to larger cases. We will come back to this issue in the concluding section of the paper.

II. ECOLOGICAL MODERNISATION IN THE U.S.: THE CASE OF RECYCLING

The Modernizing Recycling Industry

Recycling has a long history in the United States. It can be dated back well into the last century, when recent immigrants picked up rags and other items, often for resale to low-income families that could not afford new items [Melosi 1981]. Modern recycling first emerged in the late 1960s. The original programs emerged from social movements of the 1960s. Small scale social movement groups set up drop-off centers, where the homeless, immigrants, and desperate low income populations could take items from trash cans in a process that became known as "dumpster diving." The materials were then taken to recycling centers, where they were 'dropped-off' in return for money. The social movement group then resold the materials to metal scrap dealers and other small local remanufacturing firms. The community-based drop-off centers allowed marginal social populations to squeeze out an existence, in a context where decreasing work options existed.

In the late 1980s, modern recycling arrived on the U.S. urban policy agenda with considerable fanfare. It emerged from a confluence of factors. Recycling emerged at

exactly a moment when waste disposal firms needed to negotiate a truce with ecological organizations, local communities and the state [Weinberg, Pellow and Schnaiberg, 1998; Schnaiberg, 1997]. The early 1980s seemed to be a supportive climate for waste firms. The Reagan administration swept into power with an expressly anti-environmental and pro-business administration. The new administration openly flouted environmental agencies, allowed the violation of existing laws, and lobbied to undercut and/or prevent the passage of new legislation [Landy et al., 1989; Szasz, 1994]. Waste firms were able to increasingly rely on various forms of "sanitary landfills". They were also operating local or regional sites for toxic waste disposal, through incineration and/or "safe" landfilling [Portnoy, 1991]. By the mid-1980s the political climate was more tenuous. National opinion polls showed high levels of public anxiety about pollution and human health. Public anxiety was sustained by a succession of technological disasters, including the nuclear meltdowns at the Three Mile Island nuclear reactor in the U.S., and the Chernobyl reactor in the Ukraine [Kitschelt, 1984].

Environmental groups used these fears to mobilize their constituencies. By the mid-1980s, it had become harder to site new landfills [Portnoy, 1991]. Both constituencies, however, were also aware of and concerned about toxic chemicals. This was a period of time when a number of well-publicized cases revealed toxic waste contamination around the nation and the world. These included Love Canal in New York and Times Beach in Missouri. Internationally, citizens read about the dispersion of radioactive wastes from Chernobyl's nuclear power plant, as well as the toxic disaster at the Union Carbide plant in Bhopal, India. There was also a host of more localized incidents [Brown & Mikkelsen, 1990] in the same period, often discovered in the process of implementing the Resource Conservation and Recovery Act of 1976. This increasingly mobilized people to reject any waste facilities in their back-yards.

All of this made the siting of new landfills or incinerators nearly impossible [Szasz, 1994]. The anti-toxics and environmental movements successfully prevented the siting of hundreds of landfills across the United States during the 1980s, prompting many observers to declare a "landfill crisis." While most media outlets interpreted this crisis as stemming from a lack of landfill space, its origin was actually rooted in the increase of political resistance against siting rural and urban dumps.

In contrast, there had been a "business as usual" transnational transfer of many wastes from industrial to underdeveloped countries. Nationally, there was also a redistribution of hazardous wastes from more affluent northern U.S. cities to less affluent Native American reservations, as well as to more rural and southern areas [LaDuke, 1993; Moyers, 1992]. Within metropolitan areas, hazardous waste sites were increasingly centered in poorer and often minority communities and neighborhoods. This in turn raised new social and political concerns about environmental injustice in the disposal of wastes [cf.Portnoy, 1991]. Environmental injustice claims offered yet another obstacle to siting and expanding new or existing landfills to include both municipal and industrial wastes.

All of this controversy was exacerbated by the infamous Mobro 4000 and its "Garbage Barge" journey. In 1987 a garbage barge filled with municipal waste from New York City sailed down the East Coast. It continued to the Bahamas, Belize and Mexico, being denied entry at each port. After 6,000 miles of sailing, the ship returned to New York City, where its wastes originated, finally destined to be buried on Long Island itself.

This "landfill crisis" created a new set of urban bedfellows. The state needed to find ways to alleviate pressure to site new landfills. Firms had to deal with shifting consumer perceptions about waste disposal. And environmental groups were anxious to harness renewed public enthusiasm into a proactive environmental practice. Recycling

served everyone's agenda. The central promise was a new "urban alchemy." Firms would take garbage and turn it into a resource. Rather than paying to place waste into landfills, municipalities would instead now make money selling garbage to firms; they would in turn re-sell the materials to other remanufacturing firms, who wouold make new products.

In the process, firms would save municipalities money and create jobs. They would also preserve natural resources. Withdrawals would be minimized as recycled materials would be substituted for virgin materials. Additions would be reduced as fewer materials would be placed into landfills. Cities across the county worked with industry to create recycling programs. At this point, the political stage actually shifted away from pre-existing environmental groups. Recycling served a variety of political agendas, and thus it was defined differently by various organizational actors. The environmental movement had created a new maxim: "reduce, re-use and recycle". Businesses tended to emphasize only the last of these. The reason is clear: by focusing on consumers and their wastes, two goals would be achieved:

(1) industrial wastes would have more landfill space in the future than if they had to share such space with all the normal municipal wastes; and

(2) attention was shifted from producers to consumers, inducing the latter to become "environmental" by recycling their solid wastes. This shift also saved industry a great deal of money that would have had to be sunk into capital, new technology, labour and permits.

Many of the community-based environmental groups were thus locked out of the negotiations about recycling operations. While they had developed the concept of recycling, the actual details of recycling programs tended to be worked out behind closed doors by local municipal leaders and industry representatives, especially those from large

waste firms. Waste firms and local governments jointly developed large-scale municipal curbside programs. People would place materials at the curbside, where it would be picked-up and transferred to a Materials Recovery Facility (MRF). At the MRF another set of workers would sort and bale materials for resale to firms using recyclables for their production processes.

Operational details varied across cities, especially relating to who owned the MRF (the city or the waste disposal firm), and who picked up the materials (city workers, or waste firms under contract to the city). A number of factors, however, were remarkably similar across cities:

(1) social movement led drop-off centers found this modernized recycling industry politically and economically difficult, and

(2) programs were guided by a narrow set of economic concerns that pushed out the environmental and equity concerns that had traditionally guided social-movement based recycling programs.

Tables 1 and 2 document some of the important trends in the emerging industry. Table 1 documents the tremendous growth in recycling.

Table 1 about here.

Between 1980 and 1996, recycling increased from 9.6% percent of the material disposal practices to 21.9%. In contrast, landfilling decreased from 81.4% to 55.4%. Along with these changes, we also see a rise of curbside programs. In 1990, there were 2,700 in the United States. By 1996, there were 8,817 [see Carless, 1992 and U.S. Environmental Protection Agency, 1997). More important to us is the changing form of the recycling programs. This is more difficult to gauge from existing industry summaries.

The rise of large municipal programs has been so unproblematically accepted that there is no reliable count of municipal vs. drop-off programs. Instead we use a variety of indict indicators listed in Table 2.

TABLE 2 ABOUT HERE

From 1995 to 1996, we see a steady increase in MRFs being built. In fact, every report on recycling notes the continued pace of MRF construction. MRFs are places where recyclables are taken to be sorted and reballed for resale. They are not used by drop-off centers. Rather, they accompany the rise of municipal programs, as places where the waste hauling organizations can take and sort large quantity of materials. They are places of centralization that are necessary for large-scale recycling programs. Even more importantly, we see a substantial rise in mixed-waste MRFs, from 34 to 58, with capacity growing from 20,000 to 34,800 tons. Mixed-waste MRFs are again a product of municipal programs, which create more "efficient" operations, by collecting both solid waste and recyclable materials in the same vehicle. They have modernized recycling: large firms using sophisticated machinery to cart and sort high quantities of recyclables, as an integrated part of municipal waste hauling.

The conventional narrative has been that recycling--like other environmental initiatives by industry--emerged as waste firms developed an environmental consciousness [e.g. Szasz, 1994]. We argue that this narrative is misguided on two accounts. First, the modern history of recycling has little to do with ecological consciousness and more to do with political-economic forces. Second, current organizational practices of waste firms reveal little environmental accounting or stewardship. With this shift to large industrial processing, then, there has been a dramatic change in recycling: a movement away from ecological criteria in the decision making,

and towards a set of ecological and social outcomes that are socially regressive. We now turn to the history of Chicago to unpack these dynamics.

The Early History of Recycling: The Drop-Off Centers

In Chicago, recycling was long dominated by The Resource Center. This is a drop-off center in Chicago's Grand Crossing neighborhood, a community that is 99% African American, with a third of its residents living in poverty. The Resource Center served mostly low-income people who scavenged recyclables out of alleys and garbage cans and brought them to the center, in return for cash. It was run by Ken Dunn, a legend in Chicago's environmental movement and community development circles. Dunn came to Chicago in the late 1960s. Like many activists associated with the early recycling movement, Dunn was a Vietnam War protester, counterculture activist, a Peace Corps participant, and graduate student drop-out. As he put it, "I wanted to do something of value to the community, and being a graduate student at the U. of C. [University of Chicago, Philosophy] was about as far from that vision as you could get!"

By the mid-1970s, the Center expanded beyond its drop-off operations. It developed collection routes, where residents would leave things on the corner or by garbage bins. This provided much-needed jobs for the growing rank of low-income minority men who had been disenfranchised and marginalized as Chicago began to deindustrialize. The Center also had recycling and composting contracts with several neighborhoods and businesses around the Chicago area. Finally, the Center branched out into more proactive project, taking vacant lots and abandoned buildings and "recycling" them into playgrounds, parks and gardens. The construction materials extract from the buildings, were even recycled in a process people began to call "green demolition".

None of these practices were very lucrative. Their motivations, however, were clearly social and environmental, not economic. The people behind the Center were

concerned that the recycling programs were directly supporting the community in two ways:

(1) creating links between environmental cleanup and job creation; and

(2) turning empty lots into productive ones, keeping money circulating within the community.

In the 1980s, the Resource Center was joined on the northside of Chicago by Uptown Recycling Center. Like the Resource Center, its surrounding community was poor and ethnically diverse. Fully one-fourth of the community's residents were below the poverty line, and many of those were homeless. Both Centers operated similarly. They were directed by local community members, who came from a variety of walks of life. But they were united in viewing recycling as a social movement that was beneficial for the community, the local economy, and the environment. They operated low-tech centers focused on ecological and social criteria. The following is an excerpt from our field notes at the site:

> We are standing in an aluminum shed at the Uptown yard surrounded by a can crushing machine, weigh scale, a coffee machine, and a wooden sign leaning up against the wall displaying the prices for a great variety of materials from scrap metal to kitchen sinks. Every couple of minutes very rough-looking people (possibly homeless, definitely under- and unemployed and over thirty years of age) with grocery carts, garbage bags, and children's wagons bring pounds of materials to sell. The site manager, Souma Phosaraj, is Southeast Asian and looks about 50. Souma oversees all monetary transactions. It is important to understand that a recycling 'yard' is just that. It's an outside, open air yard. It has the best ventilation system possible, really. Ventilation is often cited as one of the chief contributors to poor working conditions in MRFs. Here this isn't a problem. However, you are then left at the mercy of the elements. [Fieldnotes, Fall 1996]

By the mid-1980s, both recycling centers were running smoothly. They were providing employment for workers whom a manager noted, "would otherwise be considered unemployable." They had also become important local advocates for progressive community development programs. They consciously undertook campaigns to raise awareness among constituents, including the disenfranchised individuals who often worked for them. Thus, the Centers came to embody three goals:

(1) to divert recyclable materials from the waste stream, thereby reducing Chicago's dependence on landfills and incinerators;

(2) to provide entry-level jobs and a source of income for people in the struggling communities; and

(3) to educate people about the environmental and economic benefits of recycling.

In 1987, the City of Chicago recognized the positive benefits of the community-based centers. The City awarded Uptown a modest 'diversion credit' for URI's collection routes. Diversion credits were small amounts of money paid to Uptown, for diverting garbage from the waste stream and landfills. Such credits were meant to give URI the money that the city would otherwise have to pay for landfill usage. With the diversion credit and growing community interest in recycling, both Centers were fairly stable. For example: URI's weekly household collection programs grew from collecting around 9-10 tons per month in 1986 to 56 tons per month in 1990. They were collecting recylclables from approximately 19,000 households, with a resident participation rate that reached 80 percent at one time. URI also published a newsletter with a circulation of 2,000. The staff was usually overwhelmed with the ever-growing requests for speaking engagements, tours of the facility, and general information on residential recycling options in the area.

Interestingly, people associated with the Centers are most proud about the social goals the Centers achieved during this period. In interviews, people mentioned the ability of the Centers to provide employment for people struggling in the deindustrailizing economy, and to provide educational campaigns for the community on social and ecological issues. A board member of the Uptown Center explains:

> What I'm hinting at is that when Uptown Recycling was getting started, it was very definitely still a [social] movement for these folks because their motivation was based upon a sense of the good, not upon a sense of a cost-benefit analysis or is it cheaper for them to have recycling than to have a larger dumpster. It was a sense of meaning. A qualitative evaluation rather than a quantitative calculation.

In the early 1990s, the City of Chicago began to think more seriously about a larger-scale program. The City of Chicago needed a system that would bring it into compliance with city and state laws. Illinois law required that Chicago have a solid waste management plan that would achieve a 15 percent recycling rate by 1994 and 25 percent by 1996. Second, the City started to get pressure from large waste hauling firms to form a partnership to increase recycling. Traditionally, the waste firms hauled trash, leaving recycling to the Centers. This began to change. Technological innovations opened up new possibilities for these firms. This was especially true for Waste Management, the largest waste hauler in the world, which was headquartered in the Chicago area. In particular, new extraction technologies offered the promise of retrieving materials from the raw waste stream. If recyclables could be gathered along with the normal waste stream, then recycling would no longer depend upon people's social consciousness in placing materials on the street. It would be possible to recycle large quantities of recyclabes, for the first time making the recycling process potentially financially lucrative.

All of this was exacerbated by local politics. A coalition of environmental groups called the West Side Association for a Safe and Toxic-free Environment (W.A.S.T.E.) began to challenge the city's efforts to keep open the Northwest Incinerator, which was finally closed in 1996. They argued that, on social, economic and environmental grounds, recycling was a sounder option. In turn, this placed even more pressure on the City to recycle, and more pressure on waste firms to develop new waste-disposal practices to replace incineration. Waste Management, Browning Ferris Industries (the world's second-largest waste hauler) and other smaller-scale regional waste hauling firms saw recycling as a golden new political and economic opportunity.

Modernizing Recycling Practices: The Emergence of the Blue Bag Program

In 1990, the City of Chicago announced a Request For Proposals (RFP) for developing a comprehensive, city-wide, residential recycling program. The RFP came as a surprise to people who were familiar with the City's recycling community. The RFP specified that the program was to be city-wide. By arbitrarily refusing to consider bids for separate sectors within Chicago, it *ipso facto* excluded the full array of community-based centers. Ann Irving, the executive director of the Chicago Recycling Coalition, called the RFP process an example of "bald-faced power playing by a corporation with a monopoly." Irving and others hinted that the RFP was carefully written to target Waste Management as the ultimate contractor. The Coalition believed that the local recycling community had essentially been locked-out of the proposal. Many felt that they test-piloted a program, which in turn was then stolen from them. Nobody was surprised when Waste Management was awarded the contract.

Over the following months, the City worked with Waste Management to develop the idea of a "Blue bag" program. The program required residents to place their

recyclables in blue plastic bags. These would be collected along with residential trash (municipal solid waste), in regular garbage trucks. Trucks would compress their loads (to increase efficiency of pickup costs), and then dump them at new "Material Recycling and Recovery Facilities" (MRRFs). Both Blue bags and regular garbage bags would be pulled out and their contents separated manually. Recyclable materials in regular garbage bags would also be pulled out of the stream for hand sorting.

Immediately, people in the recycling community expressed outrage at the lack of social or ecological criteria in the decision making process. The following critiques were made by the Chicago Recycling Coalition, the Centers and others in the recycling community. First, the Blue-bag operating system was selected because it was the cheapest way to start a program. A leading trade publication sumerized:

> "the primary reason given for adopting the commingled bag/MRRF recycling program is its affordability". [Solid Waste Management Newsletter, 1990].

In particular, the Blue bag program fit right into WMX's existing structure, with few changes. To quote a former Waste Management manager:

> In 1991 the City went out to look and see how should we recycle and one of the things that they saw is that a lot of places have curbside programs and they looked at the cost of that. The cost -- because you end up sending two trucks down an alley, it was cost prohibitive. So they looked at the Blue bag program. Where possible they have externalized and/or minimized costs. For example, the decision to combine municipal solid waste with recyclables in collection and sorting was based on cost minimization. No new trucks, routes, or haulers were needed.

Waste Management focused most of their efforts on cutting costs. The MRRF sites themselves were situated on environmentally-polluted land, because it was cheap.

One of the MRRFs was constructed on an old landfill on Chicago's Southeast Side. This is an area of the city that activists commonly refer to as "the Toxic Doughnut" because it is so inundated with polluting industries that residents are surrounded by toxic facilities on all sides. Finally, the buildings were designed with attention paid only to issues like waste volume and shipping/receiving spaces for trucks. No consideration was made for energy efficiency or ecological design. The buildings had no heat or air-conditioning. In the winter temperatures were frigid. In the summer the combination of summer humidity, rotting garbage, machinery and people made the building extremely hot.

Second, the decision making ignored the minimized ecological gains from the program. A local environmental organization, the Chicago Recycling Coalition (CRC), led the way in attacking the Blue bag as a fiscal and ecological nightmare. Ann Irving, then Executive Director of CRC, described to us how the program was designed solely on economic and political considerations:

> I think the most telling thing about the relationship between the city and WMI was that... the city chose this program, decided it was going to go ahead with this lengthy process of writing an RFP and during that process there was open discussion about what this program was going to consist of, but the city was a little cagey as to what it was precisely going to ask for in the RFP. But what it was very up-front about was they were arguing that the contractor would be asked to provide the capital in order to construct the facilities. And that aced out a lot of smaller waste haulers in the area who might have been very interested in doing itÖ.And the city kept arguing that it couldn't accept people like them because they just couldn't be sure that they would have the capital resources necessary to go with these very large facilities, the price of which of course would increase--even double--by the time it was built.

Not surprisingly, the Blue bag system did not work very effectively. As with regular garbage bags, when Blue bags were compressed in garbage trucks, they broke. By the time the bags got to the MRRF, the loads consisted of wet trash and contaminated recyclables. Some materials were too contaminated to be saved. Nonetheless, workers were confronted with the task of having to fish out the recyclables from a sea of garbage. A single contaminated load of recyclables can ruin an entire production batch in the remanufacturing process. Contaminated recyclables therefore have much lower exchange-value. For example, there are over 90 varieties of paper. If they are not sorted and a remanufacturer tries to use recycled paper to make a higher-grade paper product, the resulting batch will be defective. An internal memo from the Chicago Recycling Coalition stated this quite forcefully:

> The [Blue bag] system mixes all recyclable materials together in one bag. Recycling industry representatives say that much of the material will be poor quality and difficult to recycle. FSC Paper, the area's main newsprint buyer, has said that newspaper contaminated with glass shards will damage its machinery. If the city is unable to sell the materials, they will have to be landfilled or incinerated, which defeats the whole purpose of the program. The city and Waste Management will not be able to sell these low grade materials for top dollar, so the overall cost to taxpayers is likely to be higher.

For cost-saving purposes, Waste Management also refused to either hire trained workers or to slow down the line. Waste Management uses a temporary job service, Remedial Environmental Management (REM), which effectively operates as a day labour exchange. These oppressive relations of production and the associated low recovery rates have hurt the firm's productivity. Figures released by the City of Chicago

and Waste Management as late as fall of 1997 reveal that the percentage of materials (excluding yard waste) that is actually recycled is averaging around 5 or 6 percent.

The following composite description of the MRRF operations reveals a graphic portrait of the social problems generated by the new program. The composite is based on our interviews with workers and foremen in their homes, who, like the rest of Waste Management's MRF workers, were all African American:

> It is 7 a.m. in the morning. You are a black woman. You are standing in a huge facility (400 yards long) It's freezing cold because there is no heat. You have just walked 1.5 miles because the facility is not reachable by public transportation. And you are too poor to own a car. You are going to spend the next 10-12 hours (often you do not know how long) standing on an assembly line sorting through raw garbage straight from trash cans. You may or may not have protective gloves, so you will have to be careful. Coming down the line could be: hypodermic needles, dead animals, live rats, broken glass, and on the odd day a baby or other human body parts. You have seen co-workers splattered with battery acid, and picking up leaking bags marked: "biohazard." To quote one of your co-workers: "I can't remember the first guy who got stuck by a needle... The guy got stuck by a bloody needle. You don't know whose needle that was. Hopefully, he didn't get infected with HIV, or Hepatitis A or B...." This worker goes on to tell us that this man was lucky compared to one of his co- workers who picked up a bag of asbestos that came down the line. For this you will be paid $6 an hour, and guaranteed employment for 89 days, at which time you will be fired one day before the 90 days needed for unionization and other benefits to start...

This description obviously stands in stark contrast to the drop-off centers. The Blue bag program marked an new era in recycling.

The Demise of Ecological and Social Roots: Attacking The Drop-Off Centers

Unfortunately, the City's support for the Blue bag program gradually led the City to withdraw support for the non-profits. As Chicago's Blue bag system became more expensive, it increasingly squeezed out the community-based centers. Beginning January 1, 1996 the City only provided 25% of its previous support to the non-profits. One year later, the City withdrew 100% of this support.

Furthermore, the Centers started to experience tension with the City of Chicago over the Centers' contracts to provide recycling to Chicago's public schools. Officially, under the Blue bag program, the choice to use the Blue bag in a Chicago public school is left to the discretion of that school's principal. Unofficially, however, City employees from the Department of Environment (which oversees the Blue bag program) have "paid visits" to teachers and principals of several high schools. They pressured school officials to cancel their agreements with non-profit recyclers in favor of the Blue bag.

Finally, Uptown Recycling's residential customers were forced by the City to support its new Blue bag program. Workers complained of dwindling recyclables as the Blue bag system went on-line. Moreover, a series of ordinances were passed, making it difficult for drop-off center workers to 'scavenge' alley and trash cans for recyclables. This was a variation of the classical aphorism that "The rich and poor are equally forbidden to scavenge in alleys". Finally, workers complained that local law enforcement officers were increasingly giving them a hard time.

The manager of Resource Management, a private suburban Chicago recycling firm, commented on this transition:

> "recycling today--because rags, scrap metal, hides were all recycled 100 years ago--but...the post-consumer curbside pickup, that's fairly recent. I think that type of activity was initiated by not-for profit interests who were interested in making

> the world a better place to live. [These were people] who had not a profit motive, but were really just doing it because it was something that they believed in. And they did a good job at that level. None of them were really financed properly. What's happened now, is the transition between that time and the time that business got involved because it made economic sense".

By withdrawing support and then coercing others to withdraw support, the City and Waste Management effectively crippled the non-profits. URI was ultimately forced to close its doors in 1997. The Resource Center continued to survive but just barely. To quote a manager from the Resource Center, "We're not breaking even by any measure of the word...". Their future is highly problematic, in short.

DISCUSSION: THREE CRITIQUES OF ECOLOGICAL MODERNIZATION

In this paper, we challenge one of the core hypothesis of ecological modernization theory, namely that the design, performance and evaluation of processes of production are increasingly based on ecological criteria in addtion to economic criteria. We have raised three critiques:

Critique #1:

There is no compelling evidence that the environment has been emancipated from the economic in decision making criteria. In this case, it appears that prior social and ecological spheres have been suppressed under a narrow economic agenda. We note the robust character of capitalism has shaped the modernizing recycling industry in at least two respects: 1) the ability of market criteria to dominate the agenda, even in the face of strong public support for ecological protection, and 2) the inability of ecological interests to penetrate organizational logics even when market opportunities exist.

This irony is not lost on local activists. Alderperson Toni Preckwinkle of the city's fourth ward wrote in a local newspaper that:

> Hyde Parkers have had access to quality recycling programs for nearly thirty years. Ken Dunn's pioneering efforts allowed many of us to feel that we got in on the ground floor of an exciting movement. ... After a year and a half of operation, it seems appropriate to consider how effective the Blue bag program is in Chicago. That isn't as easy as it sounds. A great deal of money has gone into promoting the Blue bag program. My office has special blue plastic containers, provided by the city, in place by each desk. City employees haul a giant inflatable Blue bag from festival to festival. The official message about the Blue bag program is advertised in every medium. However, while I can tell you the reading scores of sixth graders at every school in my ward, I don't have a lot of facts about the Blue bag program readily at hand. The official statistic is that ten percent of the city's households participate. We don't know what percent of Chicago's refuse stream is impacted by the program. By way of comparison, in Beverly-Morgan Park, the Resource Center reached recycling 26 percent of the refuse stream with a local participation rate of 70 percent. If it takes 70 percent of the citizens to recycle 26 percent of the refuse stream, then ten percent of the citizens are probably recycling a very small percentage of Chicago's refuse stream. Given the official blessing of the Blue bag program and the dollars allotted to promotion, this is troubling. Even more troubling is the fact that the City of Chicago Department of Environment held up a $482,196 payment due to Waste Management earlier this year, because the company failed to recycle paper, plastic and glass as promised.["Doubts abound
> about city's Blue bags". Toni Preckwinkle, Hyde Park Herald, 6/4/97, p. 4].

Ecological criteria were absent in the decision making process about production practices. Interviews with recycling center managers clearly suggested that there were structural incentives for using more ecological "words" than "deeds". The Blue bag program was marketed to the public, prior to its actual implementation, as a "green" program. A great deal of money was spent on multi-media marketing and a school-based education initiative throughout Chicago.

During the project development process, however, environmental criteria threatened to raise costs and lower efficiency, making them politically untenable. This appeared in simple early decisions over truck purchases. No consideration was given to purchasing a cleaner type of truck. It recurred in decisions about production lines. A decision was made to recycle in ways that would be efficient but produce a low quality recyclable. This minimizes the capacity of recycled materials to reduce the withdrawal rate of natural resources, since low-quality recyclables require a higher addition of virgin materials in the remanufacturing process in order to maintain material properties. Finally, this same pattern emerged in management decisions to ignore occupational and environmental hazards, which have added more dirty production in already-toxic communities. This pattern of decision making is true for many waste disposal firms across the county. For example: we note that WMI has used its corporate power to protect and expand dirty forms of waste disposal in many locales. Political and economic considerations thus shaped and drove the City and Waste Management to adopt a system that provided standardized, convenient, low-cost, and "efficient services", capturing economies of scale that could generate profits and create new jobs (albeit hazardous and low-paying ones).

Embedded in this discussion is our critique about technological choice. If and when ecological principles have played a part in this process it is only where they save corporate entitie money, which will likely then be reinvested in extracting or polluting

processes. This dynamic is again demonstrated by the Waste Management case study. The Blue bag program does not take advantage of new technologies that could minimize natural resource withdrawals and additions. Old and dirty trucks are used for pick-up. The facility eschews technologically efficient sorting, in favor of using cheap low-income unskilled labor. This produces an inexpensive but "dirty" commingled recycling stream. Technological storing innovations are not used to contain waste waiting to be sorted. This failure serves to attract vermin and exports potential public health problems to the surrounding community. The only place where ecological concerns might have played a role was in the effort to extract as much was as possible from the garbage stream. However, this activity was driven by the overriding economic motive of generating revenue for waste.

Critique #2:

The modernization of recycling appears to lead only minimally to a very narrow set of ecological gains. Many reviewers of our work have commented that, despite our critique, there are ecological gains nonetheless associated with municipal recycling practices. This is true, but such gains are minimal. Clearly, there is some reduction of natural resource withdrawals. The Blue-bag program is recovering millions of pounds of recyclabes, thereby lessening the extraction of virgin materials for productions. Second, the modernization of recycling appears to lead only minimally to a very narrow set of ecological gains. The limited gains, however, are well below what more ecologically sound forms of waste disposal could have achieved in this period.

First, Recycling drove reuse programs out of the marketplace. We refer to this as a quantitative gain at the expense of qualitative outcomes. Furthermore, modernization has brought workers into closer contact with environmental hazards, as workers sorting recyclables work in increasingly unsafe conditions, marked by close contact with

biohazards and other toxic substances. Thus, there is an increase in environmental risk even where there are some natural resource withdrawal reductions.

As cost became the driving force, Waste Management paid even less attention to working conditions. We interviewed more than two dozen workers and managers who were employed by WMX in the Blue bag system. Their stories resemble those reported by laborers in the sweat shops, steel mills, coal mines, textile mills, and meat factories of the nineteenth century U.S., and the contemporary Third World. Health and safety hazards include a myriad number of threats to worker well-being.

Recycling sorting centers are not normally thought of as workplaces that process or produce chemical toxins. But Chicago's mixed-waste "dirty" MRRFs are much more noxious than "clean" MRFs. Workers in the dirty MRRFs have to routinely handle toxic substances. Because household hazardous waste is unregulated, recyclable plastic and metal containers that recycling centers collect often contain residues of toxic wastes. As one worker explained, he comes into close contact with "anything and everything that people just normally throw out in their garbage." This included bleach, battery acid, paint and paint thinner, inks, dyes as well as razor blades, and homemade explosives.

Recycling organizations are also not organized to process medical wastes. Yet MRRF workers also routinely handle these materials. Several workers became punctured by syringes and hypodermic needles. These are some of the most common and potentially lethal accidents that can occur in materials recycling and recovery facilities [Horowitz, 1994; Powell, 1992; Ritter, 1996]. Specifically, workers who were stuck by needles were fearful of contracting HIV. An ex-Waste Management manager, later turned whistle blower, offered the following institutional analysis of the rise of medical wastes in household garbage streams:

> Let's take for example, the medical waste issue alone...in terms of the whole medical field it now has changed. Fewer and fewer people are allowed to stay in

> hospitals. Most, practically every procedure that they can think of that they could put into an outpatient basis -- they're doing it. Which means that people are taking all kinds of hypodermic needles, colostomy bags, and all this stuff home and disposing of it in the garbage. Just say, for example, all the people who are diabetics--all of the people who are forced out of the hospital because their insurance will not allow them to stay any longer, they feel like they can be better taken care of at home. Now they're sending in nurses; there's a whole network that they send out to people's houses. The reason I know this is because my dad just had serious surgery not too long ago. And he was taking all different kinds of injectables and ... he had a colostomy bag for a while. He's fine now, he still has a nurse visiting but he's not injecting anything anymore. But, my point is just think of all the people who have a legitimate use for hypodermic needles -- have a legitimate, a hospital- prescribed use for all of these items that are normally disposed of in a hospital setting.

Later discussions with a practicing health professional confirmed that these practices are indeed widespread among hospitals. This outcome is due in large part to the continued restructuring of the U.S. private health care industry. These environmental hazards add a new and disturbing dimension to the discourse around 'the health care crisis' in this nation. Our critique is not of the medical industry, but of the recycling industry. What has made for new biohazards to recycling workers is the fact that recyclable materials are **commingled** with raw garbage, which includes these medical biohazards. This is the "dirty" component of the "dirty MRRF" nature of Chicago's blue bag program. Let us be clear: for the sake of reducing the pick-up costs of recyclables, Waste Management and the City of Chicago have eagerly traded off recycling workers' health for an improved profitability for the blue bag program.

Workers also experienced shock and stress on a routine basis. For example, Edward, a former employee, told of a grisly incident that occurred during an evening shift:

> I worked in the primary department. That's where the trucks dump raw garbage right there. One time a dead lady was dumped on the floor in front of me....One woman [employee] fainted and everybody else was screaming. A couple of guys were just wandering around on the catwalk [a 40 foot structure] looking like they was dazed.

Later, at the same MRRF, two deceased human infants were discovered on the recycling line on consecutive days. Thus, psychological and physical hazards intermingle as people desperate for gainful employment and job security are pressured to continue working in the face of gross health and safety violations.

Finally, Waste Management also saved costs by simply not installing any heating or air conditioning systems in their MRRFs. In Chicago, this means the facility is typically unbearably-cold or overwhelmingly-hot. Raw garbage, especially in the warm months, generates sufficient odors to make many employees nauseous.

Critique #3:

Even if we overstated the first two critiques above, we stress here that ecological modernization has focused on the wrong part of the social process. The trajectory of recycling has negative social equity outcomes. By using treating the workers as temporary workers hired through REM, Waste Management has constructed a system of hazardous and degrading labor practices. Without a vacation, the worker might earn a gross income of $12,500 a year (assuming periodic overtime earnings)--about half of what a Chicago sanitation worker took home in 1988.

Secondly, the jobs are dead-end. The REM temporary firm's involvement seems to ensure that most of the workers will only be at the facility for a brief period of time. Even if the pay were good, the worker is not employed long enough to get his/her family back on its feet. But, even if they were at the facility, they do not acquire any employable skills. Although the facility is a high-tech structure, most of the jobs are low-tech. Hence, these recycling jobs neither support the community (through wages for families) nor the future prospects of workers (by increasing human capital).

Finally, the MRRF jobs have created ill-will in low-income ethnic communities. The MRRFs have continually used strong-arm coercive management styles to maintain production schedules. Several workers spoke to journalists about the deplorable health and safety conditions in the plants. In response, REM issued a memo to its employees, "strictly prohibiting" any communication with the media! Workers were explicitly instructed to respond with "no comment" to any inquiries about working conditions in the MRRFs. They were warned that "violation of this work rule may result in disciplinary action, up to and including immediate termination of employment."

Unfortunately, this was only the beginning of a systematic pattern of exploitation by management. Workers regularly complained of being harassed by foremen and managers who rarely let them leave the sorting lines to use the bathrooms. Moreover, managers arbitrarily instituted mandatory overtime. One whistle-blowing ex-manager recalled,

> [the managers'] philosophy was to 'keep your foot in their ass'. That was their verbal philosophy, as communicated to us. That is bound to fail. Nothing new about that.

He went on to describe the extent of the coercive conditions in his the plant:

> Yeah, you know that anybody working in those places needs a tetanus shot. You know with all of the dust and bacteria floating around in the air. If you bump your leg on a piece of metal and prick yourself...anything can happen....[they weren't given the shots]...Well it's because of the costs. The thing is that an enormous amount of money changed hands, but all of the workers were circumvented from all that. They were the last thought of part of the puzzle. They had all of these specifications as to how the plant should be built, but they had nothing in regards to workers' safety, training, employee retention, none of that....[man's name] was the site supervisor for REM and when things took a turn for the worse when everybody started to riot at the Medill plant and all the [pay] checks were coming in bad [underpaid, miscalculated], we had armed guards. I don't know if they were policemen or not, but they looked like street thugs. They were sitting around the dining room making sure that workers weren't going to bust any windows out or anything.

Thus, workers at Waste Management were treated poorly and often had to concentrate their efforts on resisting these conditions, rather than on simply being productive employees. There were other barriers facing employees who sought job security. The following quote is from a college course paper written by another ex-manager of Waste Management's MRRFs:

> At the rate of hours we are expected to work, using the hourly scale to estimate pay, moneys not paid range between $18,000 and $23,000 annually. My check stubs indicate a 40 hour work week, however, my actual average work week is closer to 68-70 hours per week. The conditions under which we work include lack of heat, lack of hot or cold water as well as lack of hand washing facilities after using portable toilets...The majority of female employees have school-age

> children and are single parents. They seemingly fit the stereotype seen and portrayed in our media as inner-city blacks who only want something for nothing. Although I have found this not to be true, our superiors believe this to be so, consequently, the way upper management treats them is colored by management's personal biases. Our plant is somewhat difficult to reach, even by car. Half of our workers walk 1.5 miles or more through open fields to get to work. There is no public transportation in the area. When hourly workers have to pick-up their children from elementary schools, our supervisors get angry and want to fire or terminate them.

Like many marginalized workers in the current political economy, REM employees face few opportunities for secure employment. Even middle managers of large corporations have no immunity from downsizing [Rifkin, 1995; Ehrenreich, 1991). Recycling workers are especially vulnerable in the labor market, because they are low-skilled and have no collective bargaining power. Without post-secondary education or union representation, they face few opportunities for meaningful or adequately-compensated work. Even though they add value to the discarded recyclables, they themselves rarely gain any real value (human capital, skills).

We note that these sorts of labor and health conditions have been found to be true more generally of the modernizing recycling industry in the United States [Powell, 1992]. A recent report from the Charles Stewart Mott Foundation stated, "These jobs tend to be of relatively low quality. With little attention given to job quality or job ladder issues, there is little likelihood that these new jobs will provide an effective avenue for rising out of poverty".[Jobs and the Urban Poor, 1998]

CONCLUSION: PROPOSED AGENDAS FOR FUTURE RESEARCH

How do we make sense of the trajectory of recycling programs? In contrast to models from ecological modernization theory, we found others more applicable. Hugh Stretton [1976], an Australian urban historian and social democratic thinker, noted that programs of environmental reform in cities were likely to fall within one of three categories.

The first reform was "The Rich Rob the Poor". Here, environmental gains were essentially achieved by coercing less-powerful citizens into compliance and participation. He cautioned that this scenario was "so far to the Right that I do not believe that any society will succeed with it, or even try it."[15]. Stretton termed the second change model "Business as usual". He characterized it as "a little to the Right of the middle of the capitalist road, and all too probable" [15]. The third pattern he termed "Trouble and Second Chances", closer to his own (and our own) preferred social democratic reforms (see chapter 6). This path has many advocates among non-governmental or social movement organizations concerned about recycling. But it is only infrequently embodied in most municipal programs. Stretton described it as "the politics of the possible: the best future that might be practicable in some at least of the capitalist democracies and therefore the one to work for." [16]

Consistent with our earlier work, we argue that much of what passes as progressive change in the United States falls much closer Stretton's model of "Business as Usual" as opposed to the "Trouble and Second Chances" [Schnaiberg, 1980, 1994; Weinberg, Pellow and Schnaiberg, 1996; Weinberg, 1997]. For us, the underlying dynamics that have shaped recycling and that characterize recycling practices are typical of the political and economic processes that have characterized the United States in the post-World War II period.

We have characterized these dynamics as the treadmill of production. The underlying dynamic of capitalist production is the attempt by market actors to extract

natural resources and convert them into profits through market exchanges. These profits are then reinvested back into the firm through the purchase of new productive physical capital, which in turn can further reduce labor costs while increasing production capacity. The basic organizational strategy is reduce workers, who are expensive and unpredictable, with technology that is consistent, efficient and productive. At each stage, profits are used to purchase more productive physical capital rather than investing in improving labor, enhancing environmental protection, or increasing social security. At each stage of this acceleration, these financial and technological changes raise the capital-intensification of production. This often results in lower employment capacity, locking organizations into a need for a constant and reliable flow of natural resources to make "efficient" use of their high-cost new technologies.

These dynamics typify the change in the post-1945 structure of the political-economy in the United States, perhaps more than in most industrial countries [Longworth. 1998]. The key driving force for this treadmill has been the growth in exchange value interests in the community's political economy. Exchange values are those associated with market interchanges, and generally revolve around levels of profitability of economic organizations, and/or levels of share prices/dividends for public investors in these organizations. The treadmill paradigm traces the rising influence of agents with exchange values over other community actors with use-values. Thus, market interchanges come to dominate almost every decision made about the urban areas [Logan and Molotch, 1987; Zukon, 1995; Squires, 1994]. Even those aspects of community life that were not previously related to market activity, like clean air and water, are reduced to market commodities.

Where does this leave ecological modernization theory? Obviously, our model of the treadmill of production stands in stark contrast to the model of ecological modernization, at least with regard to this core assumption about an emancipated

ecological sector. We believe that the contrasting models call for more empirical work to examine the a diverse set of production changes. In particular, we want to argue that research on ecological modernization has to be based on richer data, around the actual contexts of decision making.

There is an interesting historical perspective on the question of ecological criteria in production. Some contemporary environmentalists have had access to private firms for the purpose of examining ecological accounting systems and indeed discovered that firms are often very concerned about "closed loop systems" and waste minimization. Many environmentalists and scholars mistakenly viewed these concerns as the result of a recently emerged ecological consciousness among industrialists. However, most industries have always been vigilant about "housekeeping" and waste minimization, but not for ecological use value: they seek to reduce these impediments to reaping higher economic exchange values. As one steel industry manager told us, "the way we think about waste is that it's material that you could have used to make more money." More broadly, we interpret support from the corporate sector for the blue-bag to be embedded in a logic about saving landfill space and other issues related to waste cost minimization.

This issue is problematic because it also has many practical dimensions for research. We often do not have access to decision making process, or we only have access post-hoc and are left to reconstruct motives from the untrained observations of organizational actors who are speculating about the past. Often these actors may not have even been involved in the actual decision making process. Any theorizing about the emancipation of the ecological from the economic needs to be based on richer cases that can actually document **decisions** made in this context. Over the last few years, a growing list of rich case studies have been produced. These are beginning to allow us to tease out these sorts of questions [Sonnenfeld, 1998; Mol, 1995; Gille, 1998] We would call for an enhanced effort to collect and compare these sorts of case studies. They hold the best

promise for not falling into the trap of inferring production decision-making processes while only knowing production outcomes.

These case studies should also center on certain types of decisions. We have no doubt that there are a growing list of firms who claim to be environmentally concerned. What we do not know, however, are two other things:

(1) to what extent are these claims marketing strategies or organizational cultural beliefs? and

(2) to what extent is the current marketplace favorable for these sorts of ventures?

One place to engage these questions is at points of crises. Elsewhere we have argued that the pursuit of ecological means within a capitalistic framework will lead to moments of acute crises for firms [Weinberg, 1998]. We can learn much about the organizational culture from how firms respond in those moments. There is a tendency among some ecological modernizationist advocates to argue that ecological modernisation itself is a theory of win-win practices in "ecologizing the economy" and "economizing the ecology" [Frijns et al, 1998]. In contrast, instead of a sociology of win-win situations, we call for a sociology of zero-sum moments. How do firms, industries and government regimes respond when difficult decisions have to be made?

The growing debates over ecological modernization are intellectually exciting. They have brought together a growing international group of environmental social scientists who are debating over core questions of theory and practice. In many respects, we believe the debate has the potential to create the sort on interdisciplinary and international dialogue that the environmental social sciences where premised to support.

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TABLE 1

Materials Recycled, Incinerated, and Landfilled from the Municipal Solid Waste Stream in the U.S., (in Thousands of Tons) & Percent total generation, 1960-1996*

	YEAR				
	1960	**1970**	**1980**	**1990**	**1996**
Recycled	5,610 (6.4%)	8.020 (6.6%)	14,520 (9.6%)	29,650 (15%)	46,610 (21.9%)
Incinerated	27,000 (30.6%)	25,100 (20.7%)	13,700 (9%)	31,900 (16.2%)	36,090 (17.2%)
Landfilled	55,510 (63%)	87,940 (72.6%)	123,420 (81.4%)	131,550 (66.7%)	116,240 (55.4%)

*Source: Franklin Associates, Ltd. The Future of Solid Waste Management and Recycling. Multi-Client Study. November 1996. Draft.

TABLE 2

Indicators of Growth in the Recycling Industry and

Recycling Programs in the U.S., 1990-1996

	YEAR		
	1990	**1995**	**1996**
Number of MRFs	NA	310	363
MRF Capacity (in tons per day)	NA	32,000	29,400
Number of Mixed Waste MRFs	NA	34	58
Mixed Waste MRF Capacity (in tons per day)	NA	20,000	34,800
Total MRF Capacity (MRF + Mixed Waste MRF) (in tons per day)	NA	52,000	64,200
Number of Curbside Recycling Programs	2,700	7,375	8,817

*Sources: USEPA. Characterization of Municipal Solid Waste in the United States, 1996 and 1997; and Jennifer Carless. 1992. Taking Out the Trash: A No-Nonsense Guide to Recycling. Washington, D.C.: Island Press.

ENDNOTES

1. Many of the early statements about ecological modernization were not published in English. Instead, we refer readers to contemporary and accessible statements. People interested in the history of the theory should turn to these sources for thorough statements (see in particular, Mol 1995; Spaaragen 1997).

2. A post-consumer solid waste management infrastructure was already in place because Waste Management had been providing regular waste pickup service in the area for several years. It had a fleet of trucks and several transfer stations and landfills.

3. Theoretically, we would argue that the robust nature of capitalism explains the actions of recycling firms. Firms rarely gain a competitive advantage by introducing ecological criteria into production decisions; more often, their public relations gains arise from their pronouncements alone. The history of the Blue bag program, and recycling more generally, certainly substantiates this point.

4. We note that this is typical of management decisions in the US context, where much of green rhetoric has been formalized into terms like: design-for-environment, sustainable development, responsible care, good neighbour, etc. Most, like the Campaign for Environmentally Responsible Economies (CERES) are voluntary, non-enforceable initiatives promoted by large corporations. Many of these companies are directly responsible for significant habitat destruction and worker exploitation (specifically, many oil and chemical firms fit this category).

5. Thus, while many oil firms publicly proclaim their environmental concern and have environmental divisions, they quietly operate to reduce environmental protection.

Nowhere is this so dramatic as in the follow-up to the Exxon Valdez disaster in Alaska. While Exxon claimed it was cleaning up its act and the environment, it actively litigated to deny damage payments to many groups of impacted workers and citizens [Hirsch, 1997]. Moreover, it and other major oil companies had previously worked to reduce environmental regulation during the Reagan administration [Gramling & Freudenburg, 1997: 81-82], helping to set the stage for this disastrous ecological accident.