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THE WASTE OF PLACE

Decline, decay and wasting are a necessary part of life and growth; we must learn to value them and to do them well. This is one of the messages of Kevin Lynch's last book, Wasting Away, which he was working on at the time of his sudden death in 1984. The unfinished manuscript has now been edited and will be published by Sierra Club Books in 1990.

It may surprise those familiar with Lynch's previous works that this book is on the subject of waste, since he spent most of his career writing about the planning and design of cities and regions, with special emphasis on their sensuous form. Although his early work was usually pragmatic, positive and directed toward the environmental design professions, his later efforts became increasingly philosophical. This book represents a natural progression in his consideration of all aspects of urban life. He saw that we are headed in a self-destructive direction that has implications for virtually every profession, including environmental design and planning. The book is not a warning, but a plea that we should acknowledge most waste and the processes of wasting as valuable and necessary in the life of people, things and places

Sewage, smog, garbage, scrap, litter and trash make up the daily waste flow of the city. There are more protracted wastings in nature. Supernovas explode, and the shell of debris racing out into space sweeps up the dust and gas from which new stars condense, to re-ignite the atomic furnaces. The sun wastes its substance, and the mountains wear away. They are thrown up with a vomiting of magma, gas and ashes, which destroy living communities and then convert to the fertile volcanic soil that supports new life. Carbon is extracted from the air by plants and is locked by their death in beds of coal, or pools of oil. The calcium in the shells of sea creatures drifts to the depths, there to be sealed off in deep limestone layers. The smooth circling of the ecological system is only an aspect of more pervasive change—more protracted, more violent, more wasteful of matter and energy, more an irretrievable flight than a placid turning....

Man is now a significant agent in the transfer of material in this dynamic system, and may soon be the dominant one. If the rate of garbage production in North America were to be achieved throughout the world, then that mass transfer would somewhat exceed the rate of volcanic upwelling that has built the mountains of the Pacific rim. If the per capita rate of the use of new minerals that characterizes the modern industrial world should be adopted by even 15 percent of the world's population by the year 2000, then it will amount to 20 billion tons per year, which is a mass comparable to such global processes as mountain-building, erosion, ocean crust formation (estimated at 30 billion tons per year), or the recycling of all earth's biomass (estimated at 60 billion tons per year). Combustion adds 50 billion tons of carbon to the atmosphere each year, which is one percent of the total already present. We now discharge such metals as iron, copper, zinc and lead into the oceans at rates that exceed natural processes by an order of magnitude.

© 1990 David, Laura, Peter and Catherine Lynch.

Photo research and captions by Michael Southworth.



Niagara Falls represents an awesome and continuous waste of water as well as rock. Attempts to stop the erosion are futile, so why not dramatize the wasting?
Photo courtesy New York Power Authority/Niagara Falls Chamber of Commerce.



Wastes have been dumped in oceans, rivers and lakes for generations in attempts to put them out of sight. But the medical wastes, including needles, vials of blood and even body parts, that have washed up from the sea onto beaches demonstrate the futility of trying to hide our wastes.
Photo by Kirk Gendrye.

Lynch's conception of waste was broad, including phenomena as diverse as everyday waste and unwanted objects, land that must be reclaimed and acts of destruction by humans or nature; he noted that "there are hardly more than a hundred words in the language that have as many dictionary definitions."

Characteristically, he tried to expand readers' thinking by reducing the notion to its most fundamental meaning and then exploring its many implications:

"Waste," he wrote, "is what is worthless or unused for human purpose. It is a lessening of something without useful result; it is loss and abandonment, decline, separation and death. It is the spent and valueless material left after some act of production or consumption, but can also refer to any used thing: garbage, trash, litter, junk, impurity and dirt. There are waste things, waste lands, waste time and wasted lives."

In the book Lynch examines waste from many perspectives. Why are we so uncomfortable with waste and wasting? Is wasting ever

valued and celebrated?

Looking at waste in many cultures, he talks about class and waste, eating, cleaning, and death, among other subjects. Two chapters deal with "The Waste of Things" and "The Waste of Place."

"Looking at Waste" is a photographic essay on what waste processes—good and bad—look like in the environment. Another chapter attempts to define what we mean by waste. The final chapter, "Wasting Well," presents and illustrates his philosophy of positive wasting. The excerpts that follow are taken from Chapter Three, "The Waste of Place."

—Michael Southworth



Trash may provide occasions for social interchange and recreation. Town dumps often serve as social centers as well as places to find recycled things. Garage sales and flea markets are a weekend hobby for many people.

Photo by Kimberly Moses.



THE BONE-GRUBBER.

The bone-grubber is a trade of the past in post-industrial economies.

From Henry Mayhew, *London Labour and London Poor*.

Demolition is a highly specialized and dangerous activity requiring special techniques and equipment.

Human Waste of Place

These great wastings are echoed in the human settlement. Buildings are abandoned, moved, or demolished; whole areas are cleared and rebuilt. Materials weather and age, are broken up and reused. Vandalism and arson render sound structures useless. Inner city regions may be deserted—at first slowly, then with increasing speed. Lands fall vacant or derelict. Abhorred, unwanted uses are shunted out to marginal areas. Entire cities may decline or gradually be abandoned.

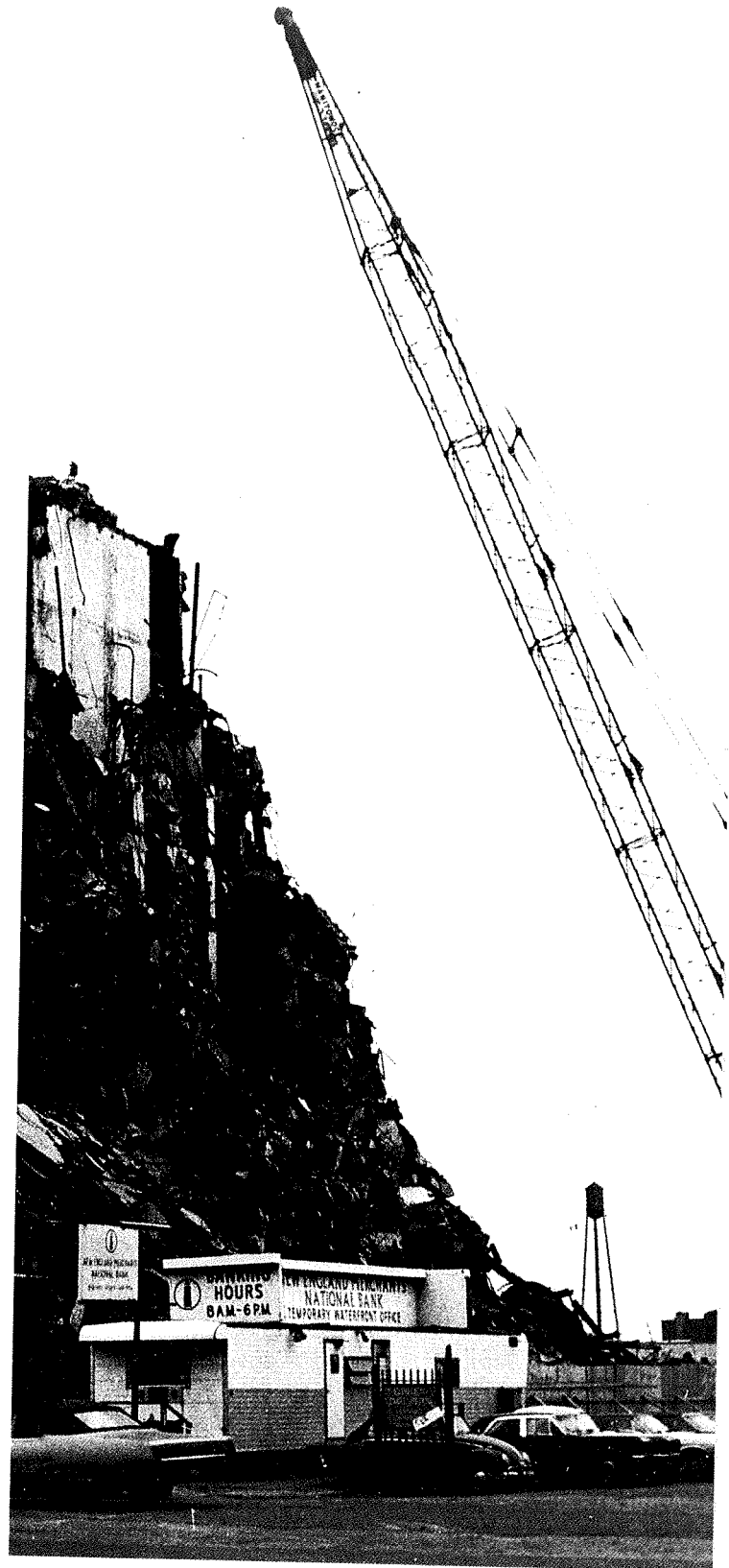
Kyoto was once a capital of 400,000 people, and it contains 700,000 today. Yet it shrank to a village in between. A wooden city, it went through repeated fires and savage civil wars. Buildings were thrown up by forced labor, abandoned, ruined, burnt, moved, or given away in pieces. Palaces were occupied for only a few years, or even for a few days in the year. Emperors and nobility moved about between houses and temples, as their palaces were destroyed. The waste of habitat was on a grand scale. Here, as in many other ancient societies, buildings and even settlements were wasted deliberately, as a symbol of royal prestige and purity, just as emperors were served more than they could eat and possessed more clothes than they could ever wear. New cities and palaces were at one time built at every accession and abandoned at each royal death.

Wreckers and Scavengers

Superficially, the building wrecker is like the saprophyte of the natural system, which reduces dead organisms to their simpler elements to speed the recycling of matter. But the likeness is only superficial. The saprophytes break an organization down into its simpler compounds, in order to make use of the material and the energy released.

Wreckers also break up old patterns, but they make little use of the energy so released. The salvaged material is only incidental to their work, and much of it is more intimately mixed when they are done. They are recyclers only secondarily, and certainly they are not remanufacturers. They are paid to clear a space, and not to prey on the dead.

It is the vandal stripper who more closely resembles the natural saprophyte. In ancient cities, old monuments and buildings were routinely mined for their stones, beams, or roofing material. An imperial rescript to the Count of the East, in A.D. 397, instructs him to use the material from demolished pagan temples to maintain the public bridges, highways, aqueducts and wells. The ruined aqueducts of Rome were closed in to make squatters' dwellings. A heap of old rubbish from the Great Fire, which encumbered eight and a half acres of central London for half a century, was shipped

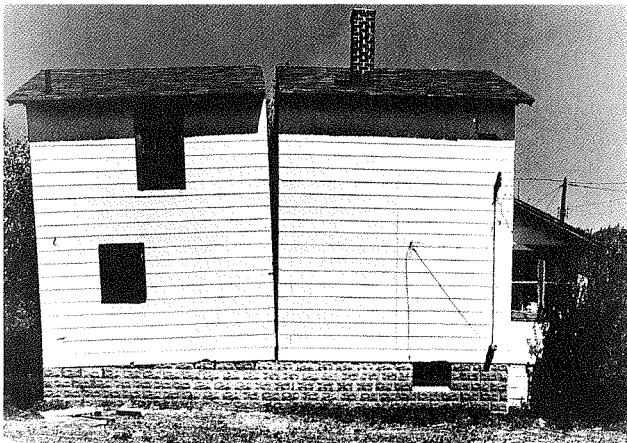


House moving, once a common activity, is reappearing in some cities to provide affordable inner city housing.

Photo by Rajeev Bhatia.



Splitting, 1984, by Gordon Matta Clark. Abandoned houses inspired Clark to deconstruct them, to cut huge holes in walls, floors, or roof. This house was cut completely in half.



Courtesy University Art Museum, University of California, Berkeley.

as fill to create the new Russian city of St. Petersburg. One advantage of living in any ruined city is its concentrated wealth of material, as well as the half-built spaces it affords....

Vandalism

Vandalism is more powerful than weathering. Like demolition, it creates waste deliberately. Vandalism first meant the willful and ignorant destruction of beautiful or venerable things by invading barbarians. Now it means the willful destruction of any property. It is widespread, but not meaningless, and it may arise in varied circumstances.

At times, vandalism is the by-product of an illegal livelihood gained by stripping and resale of valuable parts. Occasionally, it may be the unintended by-product of mere play, of exuberant action. More often, it is deliberate destruction, aimed at a person or institution that has injured the vandal. Or it is part of some large struggle, and so it is “sabotage.” Most often—and this is the motive that both fascinates and frustrates the non-vandal—it is an intentional act not directed toward any definite end: the expression of a generalized hostility, or of a sheer pleasure in destruction. Therefore, it is called “mindless.” But it is not mindless. It is quite mindful, and because of that, quite difficult to prevent.

Especially for those young males whose future is restricted and meaningless—but also for other similarly placed groups in society—vandalism is just the ticket, the ideal form of rule breaking. In a world that seems indifferent to their existence, vandalism is expressive of their feelings, and also instrumental, since by its means the world is forced to respond to them. There are risks, which add a spice of danger, but the risks are not great. The familiar and alien environment is restructured and played with according to the vandal’s own rules. Mostly absent in traditional, controlled societies, or in those that are in hopeful transition, vandalism is present throughout the relatively affluent world, both capitalist and socialist. Some vandalism is condoned (“students will have their fling”), or it is hidden within institutions, where it is expected and provided for. Elsewhere it is a common scandal....

Urban Decline

In recent times in the United States, there has been a marked decline in certain entire urban areas, a process backed by our high mobility of capital and young labor, and our historic custom of moving on. Europe on the other hand, has shown a less marked decline of its old cities, due to repeated public interventions and to the national barriers against free population movement.¹ Mobility means freedom, and efficiency in

the use of resources—at least in the short term. The 1980 President's Commission for a National Agenda proposed that national policy should encourage this mobility, rather than seek to check it.² The poor should be given incentives to move to where the jobs are, to go from Rustbelt to Sunbelt. Older cities should be allowed to shrink. Present subsidies to declining places, in their opinion, only trap the poor, since they tempt them to stay and survive, when they might move and prosper. Moving on and abandoning things is the American Way, the expression of our free spirit.

In 1975, Edgar Rust studied the declining metropolitan areas of the United States.³ He found an increase in metropolitan areas with less than one percent population growth in a decade: from five in the 1940s, to 10 in the 1950s, and to 26 in the 1960s. Between 1970 and 1972, 27 actually declined, and the trend has since become more marked. The shift from the north to the southwest is common talk, but in fact these losing areas can be found in any section of the nation.

Typically, a city in decline is one that boomed in the past, dominated by a single economic activity in which it specialized. When that activity faded, or found a more advantageous locale, the city failed to shift to new enterprise. At times, decline was reinforced by some major disaster—fire, flood, or earthquake; or by the loss of some transport connection—canal, port, or railway. The original boom may have been founded on commerce, on servicing westward settlement, on

resource extraction, heavy industry, military procurement, consumer products and services, or even, as at present, on the attraction of some preferred climate or landscape.

The larger administrative centers, with their multiple economic bases and concentrations of headquarters offices, remain stable in this flux. Headquarter locations monopolize capital and skill, and can afford to hold on to them in hard times, or to take the gamble of a shift to some new activity. They sit at the major nodes of transportation systems, so that they are not easily isolated. Administrative functions tend to persist. Moreover, a tradition of civic pride may have encouraged businesses to invest in the public environment in flush times, leaving a heritage of amenity that continues to hold their skilled people in times of adversity...

Declining areas have their own values: low housing costs, less crowding and a relatively placid, stress-free world. Church, family and ethnic ties are strong, even if the mature children are gone. But the environment is likely to be of low quality (with a few splendid survivals), and expectations and self-esteem are depressed.

Public policies that treat of decline as a local disease, or come too late, or encourage growth in other places can be ineffective or damaging. Typically, significant efforts are rarely made to address decline at its roots: to create flexibility and diversity at an early stage; to invest in the public amenity that will stabilize a place; to compensate for the social costs of



Railways are often favored areas for play and exploration by children and teenagers.

Photo by Kevin Lynch.



mobility; to put the control of enterprise in local hands; to capitalize on the hidden benefits of stability, stagnation and decline.

If the government is serious about responding to the mismatch of people and capital, then it must propose far more radical actions: the transshipment of entire communities, and not just the mobile young; the invention of transferable infrastructure and institutions; and a humane closing down of abandoned settlements. Such a policy could be an interesting speculation. It might even be rational, if expensive and politically distasteful. At least, it would make evident the hidden costs of uneven growth.

Dereliction

Derelict land is even more extensive than derelict building. Derelict land is often defined as land so damaged by development that it is incapable of beneficial use without further treatment. Note that this definition excludes land abandoned because of changes in the market, like an empty mill yard; land that is simply unpleasant or dangerous; and land naturally unusable or made so by natural cause. If it pays, it isn't derelict. If it doesn't pay, due to some human devilment, and once did pay, then it is derelict.

Surface and subsurface mining creates much land of this kind. It may destroy topsoil and vegetation, leave pits and holes, cause subsidence and flooding, and pollute the ground

What can we do with automobiles once they are no longer useful as vehicles?

Photo by Michael Southworth.



Junk is fascinating. Found objects can make the best toys, offering endless opportunities for imaginative play.

Photo by Robin Moore.



with brines, spoil heaps, acid wastes and slimes. Modern mechanical mining may accelerate this dereliction—causing deeper subsidence, or more extensive gashing—since it works to greater depths at greater speeds, and it discards larger percentages of waste piling in taller, looser heaps. Some manufacturing processes, such as steel works, smelters, power plants, gas works, or industrial chemicals, also pollute the land with their deposits of ashes, slags, metals, chemical wastes, radioactive material and other toxic substances, as well as by their massive foundations and utilities. At the same time, there have been technical advances in land reclamation, using heavy earth-moving machinery to reshape the waste heaps or recover the strip mines, and new methods for reestablishing vegetation by drainage, rebuilding the soil, and progressive planting of selected species. Reclaimed sites need 20 years to mature to a stable state. Meanwhile, they still appear derelict, and so may continue to attract illegal dumping, and the destruction of their cover....

Abandoned Transport

Abandoned transport also results in derelict lands, but these will more easily find new uses. Railroad closures have left substantial mileages of unused lines which turn out to be useful secondary recreational routes. The old city terminals and yards, being extensive and close in, are valuable for urban development. The old canals, especially in Great Britain, have proved ideal for pleasure boating.⁴ Some remove bulk seaports are truly derelict, but the old urban waterfronts from which modern container shipping has largely receded are now prime development sites. The wartime airfields of Great Britain, predicted to become permanent scars, are now largely returned to other uses. Runways are mined for aggregate, broken up, and returned to fields, or used as farm roads and hardstands. Roads themselves rarely become derelict. They continue to be used for access, although some of their structures, such as our recent elevated highways, may in good time have to be torn down. Any connected spatial network, once acquired, continues to be useful for many modes of flow: trains, pipes, cars, cycles, horses, wires, walkers, canals, whatever. When Los Angeles abandoned its extensive street railway system, it also dismembered the rights-of-way. The city has had ample occasion to regret the miscalculation....

Wastes of Successive Occupations

Landscapes shift from one function to another, are abandoned and reoccupied, take on new forms, revert and occasionally are changed irretrievably. The wastes of successive occupations accumulate and become part of the nature of the land. The European occupation of New England is a capsule example. From subsistence farms on newly cleared forest land, farmers turned to cash crops of wheat. In 1824 the wheat weevil arrived, and in 1825 the Erie Canal brought Midwestern grain to the cities. A population exodus began, and the wheat fields were converted to sheep pasture. Removal of the wool tariff in 1840 caused a shift from sheep to dairy cattle, and emigration was hastened by the loss of men in the Civil War. People moved down from the upland farms and towns to the water power, the railroad lines and the meadows of the river flats. Later, the cows no longer grazed for themselves, but were fed in the barnyard, and so the upland pastures grew back to cherry, maple, blackberry and alder: "puickerbush" in the local tongue.⁵

The farmers thought it was sinful to let those fields revert to the original forest, and yet the process continues, leaving stone fences and cellar holes in the woods, and a skeleton of narrow forest roads. "I sold the cows when the barn floor collapsed, loaned out one horse when its mate died, sold the sheep when the fences got too weak, and now I rent the tillage land and have a town job," recounted one Vermont farmer. "Somewhere in every New England mind there is an abandoned farm," wrote David McCord.

Today, the landscape is being reconverted to recreation. The houses are going uphill and out of town again. The roads are reused, and the stone fences emerge once more. Land is cleared to gain a view instead of to raise a crop. Ski runs are cut down the steep slopes, and new commercial activities appear along the river-bottom highways. In time, future successions will again remake these highways, these new second homes, these narrow ribbons of rye grass cascading down the slopes. The landscape changes, accumulating historic waste....

The Persistence of Cities

Abandoned cities—as distinct from derelict lands and ghost villages or small towns—are not as numerous as one might think, despite the vivid role their awesome ruins play in our imagination. Babylon, Nineveh, Chan Chan, Troy: the names of lost cities are magical and nostalgic. But if we analyze the listings by Chandler and Fox of those ancient cities founded between 1360 B.C. and A.D. 620, we find that out of a total of 69, 31 survive today.⁶ A 45-percent survival rate, across a time span that now averages over 2,500 years, is hardly a sign of evanescence. (If their listing is incomplete, the actual sur-

vival rate may be somewhat lower.) If we look at their more complete listing of cities built in the last 1,000 years, and count only the mature, major settlements—that is, all those that reached a size of at least 40,000 before 1900, or, in continents other than Asia (where larger cities appeared earlier), of at least 20,000 before 1600—we have a list of some 905 places. Of these, only 30 do not exist today, and 21 of the 30 were in Africa and the Americas, where the failure rate was near 10 percent. Moreover, only 20 of the remaining 875 survivors have dwindled to populations below 5,000. Urban settlements seem to have sticking power, despite (could it be because of?) the concentrated wastes they generate.

Isolated disasters have not often caused a permanent abandonment, unless they were natural shifts that destroyed the economic base (such as extensive soil erosion, siltation, or change in sea level, which destroy a harbor, or long-continued drought), or unless they were purposeful devastations, executed with malice and power. Above all else, settlements need to provide safe transport, and security from human predators. The principal killers have been war, disorder and the shift of trade. Final abandonment comes only after a long series of disasters that exhaust the will and capital of the survivors....

Antioch, in Syria, founded in 307 B.C., was one of the great cities of the Hellenistic and Roman empires. Its collapse into a small provincial town came only after a 100-year period that included: a great fire in A.D. 525, followed by recurrent outbreaks for six months; the earthquake of 526, in which 250,000 persons died, almost all the buildings fell down, ruins and corpses were ransacked by thieves, trade ceased, and citizens emigrated; aftershocks, and another major quake in 528, in which all surviving buildings and walls fell and 5,000 were killed; capture and sack by the Persians in 540, after severe street fighting, burning of the city and suburbs, and deportation of the inhabitants to Persia; bubonic plague in 542, and recurring outbreaks thereafter; earthquakes in 551 and 557, when the walls came down again; cattle plague in 557; bubonic plague again in 560 and 561; earthquakes in 557 and 588, with 60,000 killed in the latter; loss of all the olive trees, a vital permanent crop, in the drought of 599; devastation of the crops by weevils in 600; capture again by the Persians in 611, and evacuation by them in 628; capture by the Arabs in 638, after the collapse of Roman power in Syria. At that point, Antioch was at last reduced to a minor settlement....

Systematic destruction of a city in war has perhaps been a more common cause of final abandonment than natural disaster. Even then, a city is hard to kill, in part because of its strategic geographic location, its concentrated, persisting stock of physical capital and even more because of the memories, motives and skills of inhabitants. The destruction of Carthage

was an unusual success (although the site is now recommended for a new town), but the attempt to obliterate Poland's capital after the Warsaw Uprising was an instructive failure. The German army was ordered to destroy the city forever; no usable fragment of the city capital was to remain. First, those who had survived the Nazi atrocities were evacuated. Section by section, the city was fired, to reduce its mass, and then blown up by demolition teams. A large, sophisticated military force exerted a tremendous organized effort, over a period of several weeks. All the buildings fell, but a surprising amount of structure survived, both underground and at ground level. The very rubble of the explosions protected the remains and blocked the movement of the fire and demolition teams. Even more intractable was the consuming desire of the Polish people to restore their remembered city. So Warsaw reappeared.⁷....

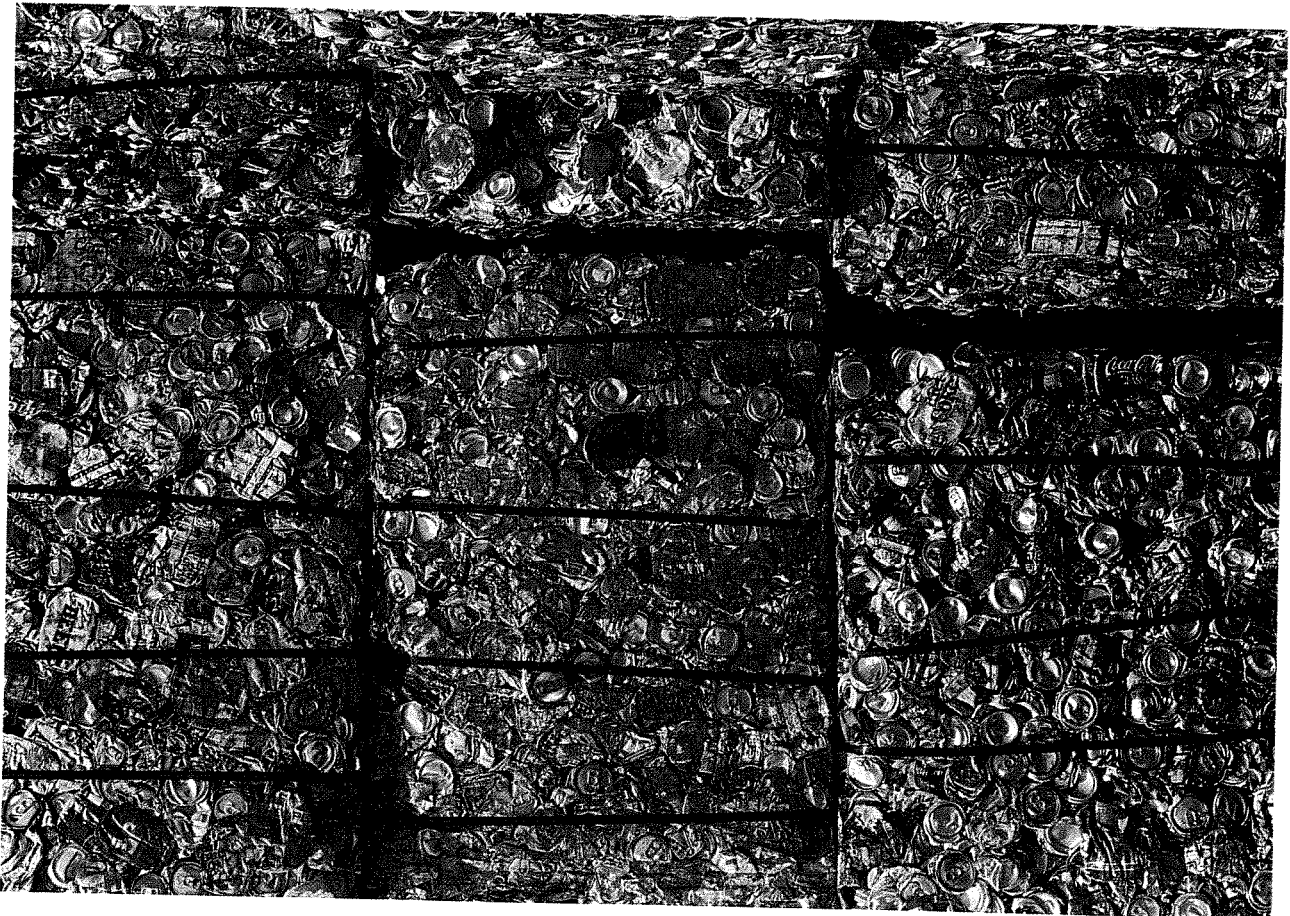
Other Places of Waste

Abandonment, dereliction and destruction are not the only breeders of waste ground. There are uses not welcome in any settled community, but essential to the larger region. These include accommodation for people on the fringe of society in one way or another: halfway houses, mental hospitals, or low-income housing projects. There are also facilities that have some direct nuisance effect: highways, airports, truck and bus terminals, distribution centers, quarries, power plants and heavy industry. There are some that need cheap quarters, or cannot or will not pay for public services: marginal industries, squatter housing, storage yards and tax-exempt institutions. And there are the abhorred wasting facilities themselves: dumps, incinerators, sewage plants and outfalls. Communities always applaud their location somewhere else in the region. We avoid them and yet depend on them.

In no contemporary new town in America, where every inch is planned, is there any provision for dump or burial ground. Indeed, there are very few cemeteries in the initial layouts of our nineteenth-century cities, although the churchyard had been a standard component of the colonial town. Now we keep death at a distance, and the thought that cemeteries are part of our disposal system is quite disturbing. We rarely enter them alive, except for the ceremony of interment. The old tradition of visiting the family graves on special days of the year is fading away. Yet graveyards were once the parks of the city, places of quiet escape and social recreation. In a few cases, they remain so today. The vast cemeteries surrounding Cairo were used on holidays by everyone. Now they are squatter settlements. Our own park-building movement began with such landscaped burial grounds as the Mt. Auburn Cemetery in Cambridge, Massachusetts, and the Spring

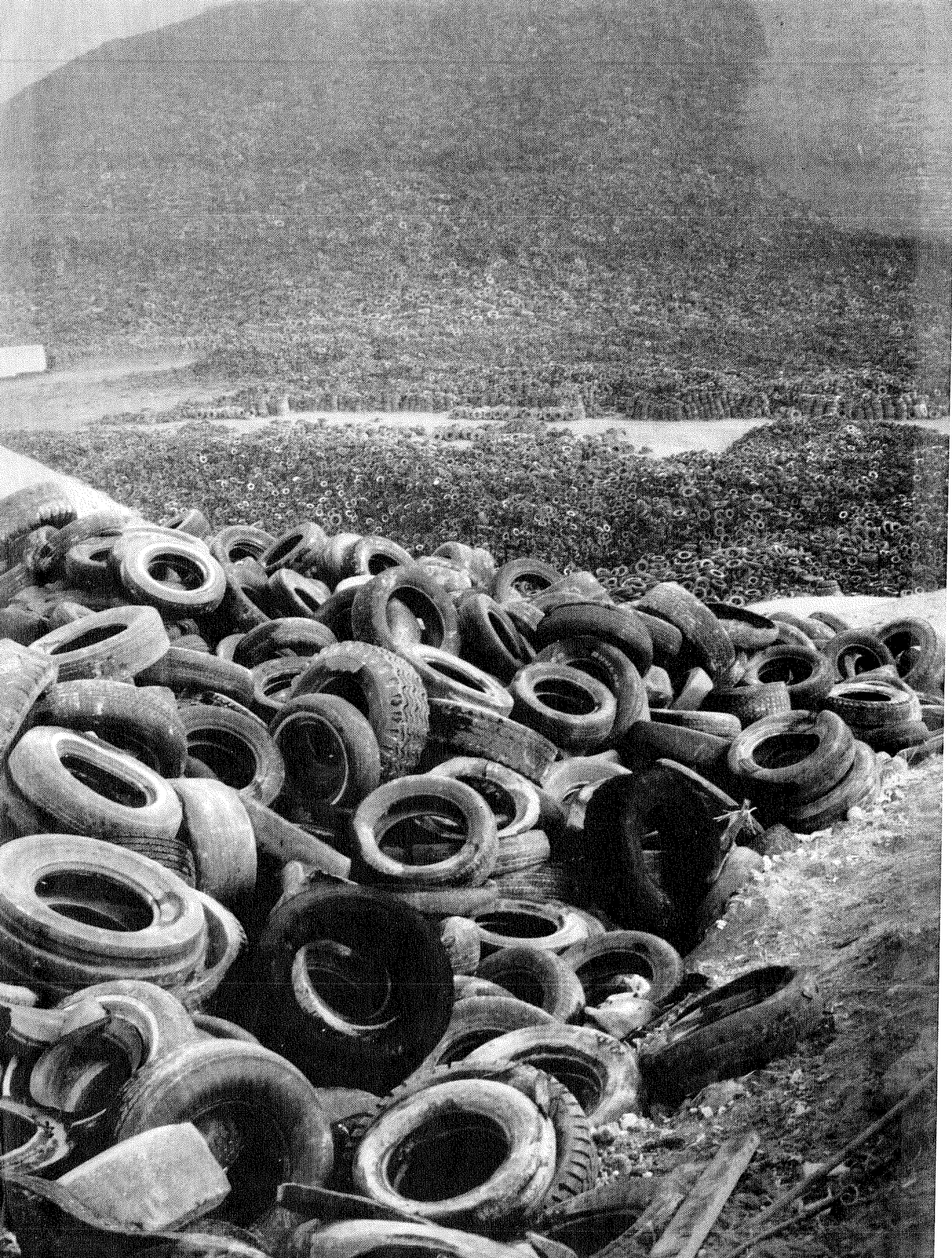


In Hindu mythology, Kali is regarded as the goddess of death and destruction.



Aluminum cans are crushed and baled before they are recycled.

Photo by Rajeev Bhatia.



Grove Cemetery in Cincinnati. Today, a cemetery is the night-time haunt of adolescents, who are also in many ways at the margin of society. Moreover, these graveyards are a refuge for wild fauna and uncultivated plants....

Urban Wilderness

Urban wilds, cemeteries and city dumps move farther and farther out, as settlement spreads. The quest for disposal room grows more pressing and is more fiercely resisted by the outlying suburban towns. The acceptable location of the margin becomes a regional issue. The swelling inflow of goods and energy into the dense urban area makes it increasingly difficult to return the waste to any productive cycle, or even to put it down where it will not offend. It was this very concentration of resources in cities, of course, that first provoked the great wastings of war. Now, as the region continues to expand, wastelands reappear at the city center, in the form of vacant lots, boarded housing, junked cars and exhausted slums. The rural poverty and rural waste heaps of the past are being encompassed as underused land and marginal groups within the city itself. Remote or central, these wastelands are also the places where discarded ways of life survive and where new things begin.

Within any city littered yards are used for low-cost storage and low-value activity, and fragmented, masterless spaces are used for disposal. Grady Clay has named them "sinks." Linwood Avenue, in inner Somerville, Massachusetts, is typical of such marginal areas. Isolated behind the elevated McGrath highway, it is accessible only by a single indirect entrance. Its low, repatched, concrete block buildings, spotted with signs, are closed in on themselves. These are warehouses, service industries and repair depots. They stand within ragged dirt and asphalt yards, full of discarded objects. The broad streets, surfaced in cracked and oily paving, have no regular edges, but are sporadically lined with broken chain-link fences. Trucks and cars are double- and triple-parked, or nose into the yards. The workers are male, in rough and dirty clothes. An ugly, polluted, yet tolerant place, where the workers seem at ease. A remnant left by a carelessly planned highway, it is a refuge for infant and relict enterprises. However unseemly, these urban remnants are also freer places, where one is momentarily relieved of the pressures of status, power, explicit purpose and strict control. These shabby careless backsides, these rear yards, alleys, outhouses and urban rat holes, have their own delights....

Facing page: Mountains of used tires are now converted to electrical energy near Modesto, CA. Photo courtesy Oxford Energy Company.

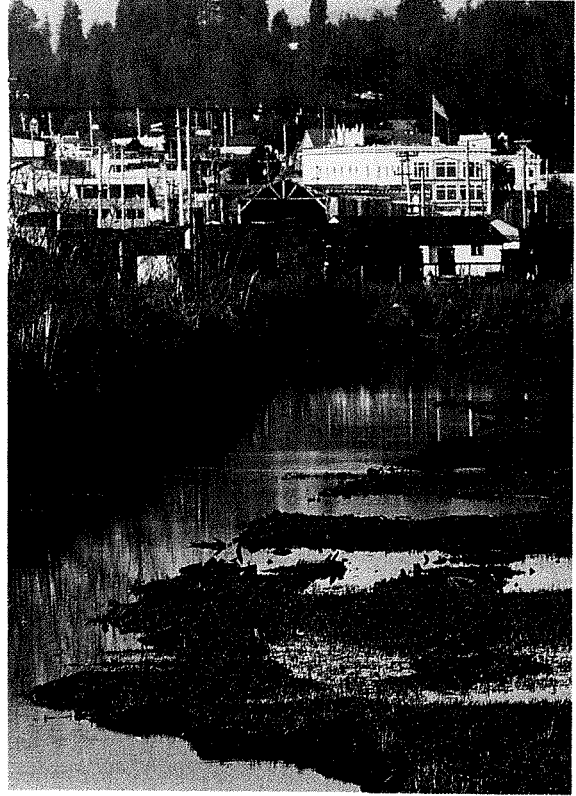


Urban "sinks," however unattractive, have their own values and delights. They are relatively free of social control and provide habitats where outdated things can survive and new ones may gain a foothold.

Photo by Michael Southworth.

A Tangled Mix

Wasting is a pervasive (if valiantly ignored) process in human society, just as it is elsewhere in the living system. It is a feature of the underlying flux that carries us along, the everlasting impermanence of things. There is a short-term wasting of objects, and a long-term wasting of place. Each has its own characteristics. The rate fluctuates, and the flow is cyclical or directed, depending on circumstances. It threatens our health, our comfort and our feelings. It interferes with the efficiency of our enterprises. Still, it has its own values. If we seek to preserve things, it is a ceaseless threat. If we look for continuity and not permanence, on the other hand, then wasting might be turned to account. Rarely has any accumulation of waste caused the abandonment of a settled place, unless it has served to hasten some natural evolution. Only occasionally has the environment been pushed to some truly irreversible dead end. Wasting has not usually caused fundamental social change, but it accelerates changes already under way, and shifts the distribution of burdens. It seems to us a tangled mix of good and evil, and mostly the latter. Hidden behind the polite facade of living, its presence preoccupies us: it is an affair of the mind. Might there be pleasures in it, and practical opportunities? Could we be at ease with it?



Arcata, CA, waste treatment ponds use natural processes to treat waste water. A railroad trestle, dump and lumber mill were converted to marshes that treat waste water while serving as a wildlife sanctuary, salmon ranch and recreation area used by hikers and bird watchers. Photo by Carol Arnold, California Coastal Conservancy.



Disposal of solid wastes is a worldwide problem. Increasingly, municipal incinerators are being shut down since solid wastes, when burned, generate airborne wastes. Photo by Catherine Lynch.

Notes

1. It should be noted that decentralization of the American city has been heavily subsidized by the federal government, especially by means of highway construction and backing of home mortgages.
2. *Report of the President's Commission for a National Agenda for the Eighties* (Washington, D.C.: U.S. Government Printing Office, 1980).
3. Edgar Rust, "Development without Growth: Lessons Derived from the U.S. Metropolitan Experience" (Conference paper, Alternative Futures for Older Metropolitan Regions Conference, Youngstown, Ohio, May 1977).
4. The old canals of Lowell, Massachusetts, built to power the textile mills, have been recycled along with the mills and machinery to become the framework for an educational and historical park.
5. Sheafe Satterthwaite, "Puckerbrush, Cellar Holes, Rubble: Observations on Abandonment in Vermont," in *A Sense of Place: Images of the Vermont Landscape 1776-1976* (Burlington, VT: Robert Hull Fleming Museum, 1976).
6. Tertius Chandler and Gerald Fox, *3,000 Years of Urban Growth* (New York: Academic Press, 1974).
7. By the end of the World War II, about 90 percent of the historic buildings, three-quarters of all residential buildings and one-third of the streets of Warsaw had been destroyed. Both old and new towns of Warsaw were reconstructed building by building and almost brick by brick. In the old town, the reconstruction program included not only all the churches, but also the burghers' houses, dating from the fifteenth to the seventeenth centuries. The interiors were rebuilt according to the extant architectural plans, and facades were restored on the basis of old photographs and drawings. The maze of old town streets and squares and public foci such as the Fukier wine shop were carefully reconstructed. The Royal Road, lined by historic residences, churches and monuments, representing diverse architectural and sculptural styles from the sixteenth to the twentieth centuries, was rebuilt meticulously, along with the two royal residences, which have a very important place in people's memories. Juliusz W. Gomulicki, *Warsaw* (Warsaw: Arkady, 1967).



The garden of the Bulwinkle house in Oakland is a fantasy of birds, flowers and other things fabricated from scrap iron.
Photo by Kimberly Moses.