Small Is Beautiful, Big Is Subsidized

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Chapter 1: Mr. Bigglestone's Dilemma

"[T]he trend toward concentration of economic power is not a response to natural law or inexorable technological imperatives. Rather it is the result of institutional forces which are subject to control, change and reversal..."

Walter Adams, in Corporate Power in America[1]

"'Excuse me ... but what planet are you living on? You talk about participating in globalization as if it were a choice you had. Globalization isn't a choice. It's a reality.... I didn't start it, I can't stop it, and neither can you.'"

Thomas L. Friedman, The New York Times[2]

Montpelier, capital of the state of Vermont, lies comfortably nestled in the folds of the Green Mountains, midway between Boston and Montreal. With a population just above 8,000, it is the smallest capital city in North America. It is also the only one without a McDonald's restaurant -- a noteworthy distinction now that Golden Arches span from Belgrade and Beijing to Penang and beyond.

While Montpelier is unlikely to lose its standing among diminutive capitals, its status as a McDonald's-free zone recently came under serious threat: the fast-food giant, frenetically opening new outlets at a clip of one every three hours, decided to put one in the middle of Montpelier's small but bustling downtown. Local residents were, for the most part, not pleased. In an effort to preserve their town's character and economy, citizens engaged the corporation in a long, hard-fought battle -- and eventually succeeded in turning McDonald's away. Today, there are no Big Macs in Montpelier, and the only McBusiness in town is a local bar called McGillicuddy's.

One might expect that Montpelier businesspeople -- for whose sake much of this battle was waged -- would have been all aglow in the aftermath of victory. The prevailing mood, however, was not optimism but fatalism. Kent Bigglestone, president of the Montpelier Business Association, explained why: "People are only kidding themselves if they think they can keep all the big chain stores out of Montpelier," he said.

Mr. Bigglestone, it should be noted, has no reason to look favourably on large corporations. His own family-run office supply store on Main Street is endangered by another corporate giant, Staples, the world's largest office product retailer, which has opened one of their 'category killer' stores just two miles away, in a mall in an adjoining town. Mr. Bigglestone may not welcome a future with no place for businesses like his, but he's resigned to it. After all, "it's a natural evolution that the national chains are going to come", he says.[3]

Mr. Bigglestone is not alone in blaming 'nature' or 'evolution' for the growing dominance of huge corporations. Most people who give it any thought probably

believe that large scale must confer inherent, 'natural' advantages over anything smaller -- thus explaining trends clearly visible over the last century and more. It's not only that giant supermarkets have replaced neighborhood grocers or that Wal-Mart is emptying whole downtowns of their small shops. In agriculture, small family farms have all but disappeared throughout the industrialised world, their lands swept up into huge agribusinesses. Decentralised one-room schoolhouses have given way to 'consolidated' schools the shape and size of factories. While small towns and rural villages are atrophying, cities and their dependent suburbs relentlessly expand.

But the trend towards ever larger scale seems especially true within the business world, where a vast amount of economic power is being distilled into the boardrooms of a relative handful of transnational corporations. Each day brings news of another merger or acquisition -- one corporate giant swallowing another, only to be swallowed in turn by one still larger. The scale of these enterprises has grown so huge that family-owned Main Street businesses seem all but irrelevant. Ted Turner neatly demonstrated the new standards of measurement when his Turner Broadcasting System (TBS) merged into Time-Warner. He explained the move by saying, "I'm tired of being little all the time. I want to see what it's like to be big for a while". At the time, Turner's company had 7,000 employees and annual revenues exceeding $2.8 billion.[4]

If this is 'evolution' at work, then natural selection apparently finds even the nation-state too small. In thrall to the manic logic of boundless economic growth and borderless 'free trade', governments are systematically erasing barriers between regional and national economies to clear the way for a trading arena of the largest scale possible: an all-encompassing global economy. If this

means destroying diverse local economies and small, self-reliant communities around the world, it is only to help 'natural selection' do away with vestigial appendages no longer useful. The apparent evolutionary goal of all this is the 'Global Village' -- an oxymoronic phrase which now connotes not only intimacy and community, but hints at manifest destiny as well.

The trend toward larger scale is clear enough; but any questioning of root causes is stifled by the din of voices emphasising how natural and inevitable it is: we are being told, in effect, that Nature itself abhors the small and the local. On the pages of The New York Times one can read that globalisation is "inevitable";[5] the financial press adds that alternatives like economic localisation are "simply not possible".[6] Heavily-promoted books like Bill Gates' The Road Ahead argue that "because progress will come no matter what, we need to make the best of it -- not try to forestall it".[7] Even after massive flows of international capital into Asian countries pumped up speculative 'bubbles' which then collapsed spectacularly -- sending much of the continent into crisis -- the IMF persisted in declaring capital liberalisation "an irreversible trend."[8] Sometimes even the 'alternative' press sings the same refrain: one widely-read publication described biotechnology and other corporate-friendly mega-technologies as "an irreversible evolutionary transition" from which "there's no going back".[9]

It would be unnecessary to harp on the inevitability of these trends if the future looked uniformly bright to everyone -- if corporate growth and the ever-expanding scale of the economy were not accompanied by so much ecological damage, so much social and economic hardship. Bill Gates' euphoria cannot hide the fact that the trajectory of 'progress' has been mirrored by that of

countless negative indicators -- including unemployment, the gap between rich and poor, homelessness, ethnic and racial conflict, wilderness loss, climate change, and species extinction. And though economic globalisation has been sold to the world as a means of bringing stability and peace, it has already given rise to an entirely new problem -- 'contagious instability' -- in which economic upheaval in one country rapidly spreads around the world, leaving devalued currencies, bankruptcies, unemployment, even economic collapse in its wake. All of these trends, linked as they are to growing scale, might understandably lead people to seek ways of limiting that growth. But if our course is set by forces outside human control, then debate is silenced, dissent stifled, and activism pre-empted. How, after all, can we stand in the way of 'natural evolution'?

Framing conditions for the growth of larger scale

It is the thesis of this publication that the growth of ever larger corporations operating in an increasingly globalised economic arena is not the product of natural or evolutionary processes, but is very much the result of human decisions -- particularly the policy choices made in our names by governments. Such decisions can be changed, and so can the course of our collective social and economic life.

Though human decisions are the motive force behind corporate growth and economic globalisation, this doesn't mean that an overarching conspiracy is at work. The situation is analogous to the propaganda model described by Noam Chomsky, which explains how the media is censored -- not through the machinations of men meeting secretly in a smoke-filled room -- but through a

fairly simple set of conditions that ultimately lead even well-intentioned reporters and editors to play a role in censoring the news. In his study of this model, David Edwards describes how an initial set of human-made 'framing conditions' can make for a predictable, inevitable outcome:

> "The mechanism by which this occurs can easily be demonstrated by setting out a flat, box-like framework on a table. By pouring a stream of tiny balls over this frame, we find that we eventually, and inevitably, end up with a more or less perfect pyramid shape.... No one is designing the pyramid, or forcing the balls into place; the pyramid is simply an inevitable product of the framing conditions of round objects falling onto a square wooden frame."[10]

What human-made 'framing conditions' make the small and local seem evolutionary dead-ends, promote the growth of ever larger corporations, and make a globalised economy appear 'inevitable'?

Since the question is about large versus small, it's not surprising that one side of the 'frame' is built around power -- both the power of governing institutions to make decisions on behalf of society as a whole, and the power of a wealthy business elite that strives to maintain and expand its economic position. Today, this elite is defined not just by the multi-million-dollar salary and stock option packages commanded by top CEOs, but also by the corporate form itself. As globalisation critic Jerry Mander has pointed out, the 'rules of corporate behavior' offer little leeway for decision-making based on values other than those of growth and profit; many decisions made by seemingly ruthless CEOs are effectively dictated by the imperatives of the corporate machine and the

rules of finance.[11] But with rare exceptions, business leaders are not clamoring for more restrictive corporate charters, tighter controls on finance and trade, or limits on corporate power generally -- in fact, quite the opposite. While acknowledging the central importance of the corporate form, it seems fair to assume that the business elite ultimately sees its own interests served by that model, and would oppose fundamental changes to it.

Another part of the frame is aligned along an ideological or worldview axis, and is made up of society's dominant economic and technological beliefs and attitudes. In the industrialised world, this ideology is based upon such assumptions as these:

- markets are the best and most rational means of governing social and economic affairs;

- since the proper functioning of markets depends on individualism and competitiveness, these traits should be honored and cultivated;

- the well-being of both individuals and societies is best measured in terms of their levels of consumption, and therefore healthy societies require constant economic growth;

- advances in technology are either beneficial or at worst 'neutral', and in any event the advance of technology is beyond social control;

- whatever their costs, the technological and economic changes associated with 'progress' are an improvement on the past, which was a time of unrelieved drudgery and deprivation.

The notion that globalisation and corporate growth are inevitable, natural processes is becoming part of this worldview as well.

Like the belief system of any culture, the industrial worldview is tightly self-contained. The intrinsic value of technological advance and economic growth are its basic underpinnings, and simply cannot be questioned: if problems arise because of technology, still more advanced technologies must be relied upon to provide the solution; if economic growth gives rise to social and environmental breakdown, the cure is predicated upon still more economic development. In this way the stakes grow ever larger, in a global game of gambler's ruin.

Needless to say, these framing conditions are hardly independent. Government decisions, for example, help determine whether the elite grows in economic power, or diminishes. The business elite, in turn, has profound influence over government decisions -- for example through campaign donations that offer access to elected officials, and via the 'revolving door' that links corporate board rooms and the government bureaucracies that supposedly oversee them.

The business elite also has the ability to manipulate the mainstream worldview. The billions of dollars spent on advertising, for instance, consistently portray consumption as the answer to all life's problems. Through corporate control of the media, information contrary to a business-friendly ideology is consistently

filtered out. Corporate-funded think-tanks, meanwhile, work to hone economic theory favorable to corporate interests into established gospel.

Much of this territory is not new. Many writers have described how the 'free trade' agreements signed by governments have been designed by and for corporations; others have revealed in depressing detail how government has in general been captured by Big Business.[12] The role of industry in manipulating public attitudes through advertising and public relations is also well documented.[13] A number of activist organisations in both the US and Europe have focused on ways in which 'corporate welfare' subsidies benefit various big businesses and industries.[14] And the prominent features of the dominant economic and technological ideology have been accurately described and critiqued.[15]

Less frequently discussed, however, is the way many seemingly neutral government policies intrinsically favor large-scale enterprises over those that are smaller in scale, a point first made by Helena Norberg-Hodge. This is particularly the case with so-called 'investments in infrastructure'. Even among many critics of the status quo, such expenditures are considered beneficial to society as a whole, so long as they are planned well and implemented fairly. These sorts of investments, however, have played a key role in promoting the growth of economic scale in general, and the rise of large corporations in particular. Similarly, many government regulations whose avowed purpose is to protect the public and the environment from corporate abuse instead systemically serve to support large scale businesses at the expense of smaller ones.

This emphasis on the role of government does not mean that the trend towards a corporate-run global economy can be reversed by tinkering with government rules or tightening some regulations. Far more fundamental change is required, and this will require widespread grassroots efforts -- not only to dismantle the power of vested interests -- but also to do the hands-on work of building communities and economies that are smaller in scale and more localised, sustainable and equitable.

But while it is unimagineable that fundamental change at the top will ever occur without significant, widespread pressure from below, the fact remains that the policy choices made by virtually every government currently serve to further the corporate agenda, and it is vitally important that those policies be changed. Doing so would represent an important step towards stopping the corporate juggernaut.

What's more, understanding the systemic roots of today's crises can be helpful even to the most local of grassroots efforts. The drive towards a global economy has given rise to so many symptoms of breakdown and inequity that focusing on one symptom or another can easily blind one to the common thread that links them all. Recognis ing that thread can help activists forge otherwise unlikely alliances, making efforts to combat the corporate-industrial system stronger and more effective. From the clearcutting of old-growth forests to the hazards of genetically engineered foods, from sweatshop labor in the South to corporate downsizing in the North, from the erosion of democracy to the loss of indigenous ways of life -- all of these (and many more) seemingly separate problems emanate from the same economic and technological system -- one that is becoming ever more divorced from real human and ecological needs.

Alternative framing conditions

The inevitability of ever larger scale is so much part of the modern worldview that one might wonder whether different framing conditions are even possible, and if so whether they would really lead in a different direction. It's therefore worthwhile to look at a culture with very different power and worldview axes -- the Old Order Amish in the United States -- not as a model for industrialised societies to emulate, but as an indication that alternative framing conditions do indeed engender very different outcomes. Since the Amish have largely held onto to their culture while living in the midst of mainstream America, they also dispel the notion that any exposure to the consumer culture automatically leads to adoption of its ways.[16]

Although Amish communities comprise a number of different sects, common to all is an ideology that celebrates community and cooperation, unlike the mainstream's emphasis on individualism and competitiveness. Far from elevating consumption to one of life's primary goals, Amish ideology instead honors simple living and self-reliance, while conspicuous consumption is actively discouraged. The attitude towards technology is also fundamentally different: Amish communities acknowledge that control of technology -- including outright prohibition -- is an appropriate and necessary societal responsibility.

Given the Amish ideological milieu -- one in which neighborliness, religious faith, and simple living are prominent features -- it is not surprising that an economic elite has not developed to any significant extent. While there are gaps

between the richest and the poorest in any Amish community, it is generally the best farmers and the most devout -- not the wealthiest -- who have the most influence and prestige.

These conditions are in turn reflected in decisions made by Amish governing institutions -- essentially a theocracy of the church fathers in each community. Through changes to the Ordnung, the set of taboos and prescribed behaviour that gives substance to Amish ideology, community leaders determine, for example, which technologies would undermine core community values and should therefore be banned.

Although this is a very sketchy and schematic view of a complex culture, the point is that the conditions around which the Old Order Amish are organized inevitably lead to and sustain small scale. Thus, at the same time that the US Secretary of Agriculture was urging American farmers to "get big or get out",[17] the governing institutions in Amish communities were rejecting mechanised tractors on the grounds that they would encourage farmers to farm more land than was socially or economically desirable. In dramatic contrast with much of the rest of rural America, Amish farms have remained small and viable, their communities prosperous, their lands fertile and healthy.

This is not to say that the Amish represent a perfect society. It is merely a way of pointing out that conscious choices made by people and their governing institutions determine whether small or large scale, or something in between, is predominant. If people in modern industrial societies were to decide to reverse the headlong rush towards the large and global, they would need to overcome powerful corporate interests, challenge a deeply embedded technological and

economic orthodoxy, and demand a fundamental redirecting of government policy. None of this would be easy, but neither 'nature' nor 'evolution' would stand in the way.

Chapter 2: The Big are Getting Bigger

"[T]here seems only one cause behind all forms of social misery: bigness.... Wherever something is wrong, something is too big."

Leopold Kohr, The Breakdown of Nations[18]

Constant and rapid growth would be considered unhealthy -- and in the long run impossible -- in almost any realm other than the economic. In that self-contained world, growth is considered the very measure of success. Nowhere is this revealed more starkly than in the annual reports of corporations, which usually announce the prospects for future growth even more loudly than they trumpet past success. Here, for example, is the CEO of Campbell's Soup Company breathlessly describing his company's growth potential:

> "As I look to the future, I shiver with business excitement. That's because Campbell Soup Company is engaged in a 'Global Consumer Crusade'.... The aim is to convert millions of new customers to Campbell brands every year. We are moving across the oceans and into new nation-states and blocs. The joy of it is that there is no speed limit on our progress. We can't be fined for speeding. Rather, the cheering will grow louder

> and stronger the faster we go... especially from our share-owners.... The potential rewards of this Global Consumer Crusade are virtually limitless."[19]

The Coca-cola Company has the world's most familiar brand name; its products sell in 195 countries, generating annual revenues above $16 billion. But financial markets insist on constant expansion, leaving the company no alternative but to grow still larger:

> "All of us in the Coca-Cola family wake up each morning knowing that every single one of the world's 5.6 billion people will get thirsty that day.... [I]f we make it impossible for these 5.6 billion people to escape Coca-Cola...then we assure our future success for many years to come. Doing anything else is not an option" (emphasis added).[20]

If growth is what has been demanded of them, corporations have delivered, in part by expanding markets beyond the borders of the nation in which they were founded. While the scale of the world economy has grown significantly in the last half century, international trade has increased even more rapidly. Between 1950 and 1992, the value of the goods and services the world produced increased by a factor of five; but the value of international trade grew twice as fast, going up by a factor of more than eleven.[21] Reflecting this steady internationalisation of the economy, companies themselves have changed. In 1950, almost all companies, even those involved in international trade, were 'national' in the sense that their shareholders were mainly residents of the country in which they were registered. By 1990 the biggest firms were all

international, their shares being held by investors throughout the world and traded on several stock markets.

Merger mania

As corporations grow in size, they often approach limits determined by the size of their market. One way to sustain further growth is by taking over or merging with competitors. In the United States, the first big wave of mergers and acquisitions occurred at the turn of the century, when approximately one-third of the entire nation's manufacturing assests were consolidated into just 318 huge corporations.[22] Mergers and takeovers have remained a fact of corporate life ever since. Between 1956 and 1968, for example, American oil companies took over more than 200 of their smaller competitors.[23] The deregulation fervor of the 1980s precipitated another frenzy of takeovers and acquisitions: in the food and beverage industry alone, the decade saw over 450 mergers in Europe, and another 400 in the US.[24]

Economic globalisation has now sparked yet another explosion of mergers and aquisitions. Based on the conviction that bigger must be better when competing in global markets, corporations that are already huge by any standard are seeking to grow still larger.

In 1997, mergers involving American companies alone totaled a record $1 trillion.[25] Among the mega-mergers that year were Bell Atlantic and Nynex (at the time, the second largest merger in US history), between Chase Manhattan and Chemical Bank (creating America's largest bank),[26] and between the Swiss Bank Corporation and Union Bank of Switzerland (creating an even larger

bank, and the second largest in the world)[27]. If MCI Communications had accepted British Telecom's merger offer, it would have been the largest such deal in British history; instead, MCI accepted nearly twice as much from Worldcom, making it for a short while the biggest merger in American history.[28,29]

By mid-1998, still larger mega-mergers -- including four of the five largest mergers in American corporate history -- shattered even 1997's record pace.[30] Banking giant Citicorp announced a merger with the Travelers Financial Corporation, creating a financial powerhouse with $700 billion in assets. Several automakers also combined: US-based Chrysler was taken over by Germany's Daimler-Benz, and British-based Rolls Royce merged with Volkswagen. Telecommunications giants SBC and Ameritech merged, a deal worth over $62 billion; aircraft manufacturer Boeing combined with former competitor McDonnell-Douglas; NationsBank and Bank America merged, a $60 billion deal that creates America's first nationwide bank; British Petroleum took over Amoco, forging a company worth more than $100 billion, the largest industrial combination ever.[31]

The sums involved in such consolidations are so huge they are difficult to comprehend. When asked how the deal involving his company's merger with another came about, the CEO of First Union Corporation replied, "I just kept stacking billion-dollar bills on the table."[32]

Corporate control of economic life

Today there are some 40,000 transnational corporations, most of them based in the industrialised countries; among them, they generated three-quarters of all the world's imports and exports, and had sales of $5.5 trillion.[33] Not all of these corporations were large (at least not by Ted Turner's standards) but some were very large indeed. In his book When Corporations Rule the World, David Korten cites some sobering statistics:

- the 500 largest corporations in the world now control 25 percent of the entire world's economic output;

- the largest 300 corporations (not including financial institutions) own roughly 25 percent of the world's productive assets;

- the 50 largest commercial banks and diversified financial companies control nearly 60 percent of all global capital.

These numbers underscore Korten's point that "The global trend is clearly toward greater concentration of the control of markets and productive assets in the hands of a few firms..." [34] The big are getting bigger, much bigger.

The control of so much wealth and power by a few transnational corporations is worrying to those who value democratic principles. But while the corporate world is certainly not blind to its unprecedented power, it is more inclined to gloat than fret over the implications for democracy. A two-page spread in the advertising trade publication Adweek, for example, showed photos of Hitler, Lenin, Napolean ... and a Coke bottle. The caption proudly declared, "Only one launched a campaign that conquered the world."[35]

Another way to gauge the phenomenal size of the biggest transnational corporations is to compare their revenues with the Gross National Products (GNP) of entire nations. The chart on pages --- --- shows that by 1993, 47 of the 100 largest economies in the world were in fact corporations, not countries. Within these corporate economies, there is an immense gap between the richest and the poorest; there is no democracy, nor any goal more important than profit and growth. In this light it is ironic that the United States government has expended so much self-righteous fury over the lingering survival of Cuba's 'planned economy', when there are more than 50 other planned economies larger, in economic terms, than Cuba. Of course, all of these others are transnational corporations.[36]

The decline of small businesses

We can also look at the other end of the scale, and see how small businesses are faring. This is not so easy as it would seem: as the scale of the economy has grown, even the definition of 'small business' has grown along with it. In the United States, for example, the self-proclaimed mission of the U.S. Small Business Administration (SBA) is to "aid, counsel, assist and protect the interests of small business concerns."[37] When the agency was founded in 1953, a small business was defined as a manufacturing plant that employed fewer than 100 persons, a wholesale establishment with annual sales of less than $200,000, or other business with sales or receipts of less than $50,000 per year. At the time, fewer than 10% of US businesses were larger than this standard.[38]

Today, however, what the SBA considers a 'small business' has grown considerably: for manufacturing, the maximum number of employees has quintupled to 500 -- and in certain industries (including ammunition manufacturers, telephone communications, and air transport services) a business can have as many as 1,500 employees and still be defined as 'small'. For most retail and service businesses, the upper limit of annual sales has grown to $5 million. But if the term 'small business' makes you think of the corner shop, you might be surprised to find that the SBA considers supermarkets with up to $20 million in annual sales 'small'. Even a commercial bank with up to $100 million in assets qualifies by today's yardstick. In practice, the SBA umbrella covers any business that is "not dominant in its field", which means that 99% of all businesses -- some of them quite large indeed -- qualify. Yet even the largest of these are minnows compared to the really big fish: the remaining 1% of businesses are so large that among them they employed over 40 percent of all US private sector workers in 1990.[39]

The growth of these very large businesses has been at least in part at the expense of the very small. Studies in the US have shown that five years after the opening of a new Wal-Mart, stores within a 20-mile radius have lost an average of 19 percent in retail sales. For many local enterprises, survival is impossible in the wake of such losses. The typical result can be gauged from the experiences of a town in Iowa, where the opening of a Wal-Mart was followed in quick succession by the closing of eight smaller businesses -- including a hardware store, three clothing stores, a drug store, a shoe store, a department store, and a variety store.[40]

Unfortunately, this trend is not limited to the United States. In England a superstore that opened in 1989 cost the nearest town center 70 percent of its trade within four years; at least ten other towns in the vicinity also lost business.[41] Since 1991, the coming of superstores known as ipermarcati to Italy has resulted in the demise of 370,000 small, family-run businesses. In less than a decade, half of the country's corner groceries and a third of its other small stores have been simply driven out of business.[42]

Small farms vs. agribusinesses

The growth of large enterprises at the expense of smaller ones has been particularly true in agriculture. In the United States, small farms have been steadily disappearing for generations. When they do, their land is usually swallowed up by larger farms, with the result that the average farm size in the US more than tripled between 1935 and 1987.[43] Large farms also need fewer people per acre: between 1950 and 1955 alone, America's agricultural sector shrank by more than a million workers.[44] This trend has been going on so long that today less than 3% of the US workforce is directly engaged in farming; yet even with so few farmers left, small farms have still been disappearing at the rate of more than 30,000 a year.[45]

This trend may have proceeded furthest in the United States, but it is occuring throughout the industrialised world. In Britain, more than 450,000 farms were in operation at the end of World War II, the majority of them smaller than 50 acres. Today, there are only half that number. Even as late as 1970, there were over 100,000 dairy farmers in the UK. But more than 30,000 of them disappeared during the 1970s, and another 20,000 folded in the decade

following. Though their numbers have already been decimated, dairy farmers in England and Wales are still disappearing at the rate of 100 each month.[46]

While small British farms are struggling, large-scale farms are thriving: the biggest 10 percent of farms today account for half of British output, and some analysts claim that cereal farmers will soon need 800 acres or more to remain profitable. This trend toward larger scale is closely related to the industrialisation of agriculture, in which traditions of land stewardship give way to an obsession with productivity and short-term profits. In fact, many of Britain's largest farms are now run by contract companies, which take on the farm's management and operation in return for a fee and a percentage of profits. One such company, Velcourt, farms a total of 60,000 acres for large landowning clients. Respected agricultural analysts point to this as the wave of the future, with the implication that the vast majority of Britain's agricultural production will soon be in the hands of just 12,000 decision-makers, few of whom will even reside on the land they farm.[47]

The loss of small farms goes hand-in-hand with the marginalisation of rural areas in general. In the past ten years, for example, the British agricultural sector has shed some 88,000 jobs. With their livelihoods gone, many rural people have little choice but to migrate to urban centers, leaving behind small towns and villages sapped of cultural and economic vitality. Rural economic health suffers further injury from the invasion of corporate chains, which displace smaller, locally-owned retail shops. While the latter recycle a high proportion of their revenues back into the local economy, corporate chains and franchises merely siphon wealth away and deliver it to corporate headquarters -- where it fuels further corporate growth and adds to the portfolios of

stockholders, but gives little back to the local economy it came from. Studies indicate that of the money spent at typical McDonald's restaurant, nearly 75% leaves the local economy.[48] Other studies have shown that Wal-Mart, which sites most of its mammoth stores in rural areas, destroys three jobs for every two it creates.[49]

Urbanisation

All over the industrialised world, cities have grown at the expense of rural areas. Thanks to Japan's urbanisation, for example, some 2,500 rural villages have been swallowed up by expanding cities.[50] The northeast United States has been so intensively urbanized that the entire 450-mile swath from Washington to Boston is often considered a single 'megalopolis'. Many of the once-independent and lively small towns in that stretch are now merely 'bedroom communities' -- suburban appendages of the nearest large city.

In the Third World most of the population still makes a living from the land, but similar trends are underway there as well. Not so long ago, farmers in the South typically produced a diversity of crops on their small holdings, thereby providing most of their family's needs for food, fiber, and fuel, and perhaps generating a small cash income by selling surpluses in a local market. But colonialism, development, and free trade policies have systematically shifted production from local needs to the requirements of global export markets. A farmer on a 2-acre plot can feed his or her own family quite well, but cannot compete in the global economy. Export-led agriculture usually demands large-scale monocultural plantations, industrial-scale machinery, and heavy

chemical inputs; but it does not require many farmers, and a large portion of the agricultural labour force is left redundant.

This process is occuring rapidly in places like China. Less than twenty years ago, 92% of China's population were farmers; now less than 40% remain on the land. In one recent year alone, 10 million peasants left their farms.[51] Agricultural modernisation is expected to 'free' so many people from the land that 440 million will be migrating to China's urban areas in the next few decades. While the vitality of rural village life is thereby decimated, 600 new cities will be needed by 2010 to handle the urban migration, according to China's Vice Minister of Construction.[52]

The population explosions in Third World cities is thus far more closely linked to modernisation and development than to overall population growth. In fact, cities like Karachi, Manila, and Lagos, which more than doubled in size between 1970 and 1990, grew twice as fast as overall population growth in their respective countries.[53] Thanks to the systematic undermining of rural life, there will be 20 more cities with populations over 10 million at the end of the century than there were in 1970. All of these additional megalopolises will be in the Third World.[54]

Large and global vs. small and local

The trends described in this chapter all follow a similar pattern: the growth of the large and global at the expense of the small and local. Populations are being drawn into huge urban agglomerations, while rural communities are sapped of economic and cultural vitality. Corporate businesses that have

already reached an unimagineable scale are growing still larger and more powerful, while small, local businesses are struggling to survive. The scope and scale of the global economy continues to expand, while local economies almost everywhere are in decline.

But what is small, and what is local? The definitions of these terms may seem self-evident, but as the Small Business Administration proves, there is much room for interpretation. Take, for example, an advertising or computer graphics business with just two or three employees operating out of a tiny office in the countryside. On one level this is certainly a small business; but if it has clients on four different continents, to what degree is it a 'local' business? Or consider an owner-operated shop selling fruits and vegetables -- surely a small business. But if the produce comes from dozens of different countries, is grown on industrial-scale farms, and is delivered by large corporate wholesalers over international transport networks, is it really 'small', or is it just a tiny piece of a gigantic global-scale trading system?

Truly small, truly local businesses are becoming increasingly rare, especially in the industrialised world. Examples might include family farmers selling directly to their customers, or craftsmen and artisans using nearby resources to produce wares for surrounding towns. One key feature of such enterprises is that the distance between producer and consumer is fairly short -- a good rule of thumb for 'local'. But today a wide range of subsidies and ignored costs mean that goods transported halfway around the world and passed through several corporate middlemen can easily be cheaper than goods produced right next door, making it hard for truly local producers to survive. Because of hidden subsidies the cost of local garlic in Spain, for example, is twice that of

garlic imported from China; similar distortions make local butter in Kenya more expensive than butter imported all the way from Denmark. It is an absurd situation, none the less so because it is justified by economic logic.

In cases like these the distance between producers and consumers is enormous, with heavy costs to people and ecosystems at both ends of the transaction. Yet government policies are encouraging this gap to widen still further. Thus, the US government sponsors dozens of programmes to induce even small firms to "travel along the exciting and profitable road to overseas markets."[55]

In countless other ways, governments are actively promoting trade among goods that could be produced locally, and are systematically encouraging the growth of scale at every level. These policies are costing people their jobs, and are breaking down the community fabric that depends upon healthy local economies; they are eroding democracy and widening the gap between rich and poor; and they are irreparably damaging ecosystems and human health across the planet.

Clearly, a fundamental change in direction is needed. The goal would not be to shrink the producer-consumer distance to some arbitrarily-defined number of miles, nor would it be to eliminate all trade. Instead, the aim would be to offer support to the small producer instead of the corporate giant, to local economies rather than the global.

Truly local economies -- where the separation between producers and consumers is minimal -- inherently promote small scale on many levels. Businesses and industries can be smaller, less centralized, and less taxing on

the environment, and communities can be less populous but still culturally and economically vibrant. In that sense, the terms 'local' and 'small' are intimately related. Importantly, they define a vision of the future radically different from that being embraced in our names by governments everywhere.

Chapter 3: Infrastructure and Scale

"International donors, including the International Monetary Fund, have been urging the Philippines to increase infrastructure spending.... [This] would strongly improve the country's chances of being awarded investment grade ratings by the international credit rating agencies."

Financial Times[56]

Politicians, economists, and business leaders often speak of the need for improvements in 'infrastructure'; when they do, no one mistakes their meaning. Images spring to mind of highways and bridges, railroad lines, airports, harbors and shipping terminals, dams, power plants, telecommunications facilities, hospitals, universities, perhaps even the 'information superhighway'.

None of this is inaccurate, of course, but what is almost never acknowledged is that these represent a particular kind of infrastructure, suitable to a particular kind of society and economy: one that is large-scale and centralized, and that encompasses huge markets. What's more, there is no recognition that other viable forms of infrastructure, suitable to other forms of society and economy, even exist.

Faith in the industrial growth model is so deeply embedded in modern western thought that membership in a society organized along industrial lines is now considered a basic human right. In a report to the US Congress, for example, the Office of Technology Assessment declared:

> "The interests of all nations ought to be fairly straightforward -- quality jobs, a rising standard of living, technological and industrial development, ensured rights of workers and consumers, and a high-quality environment at home and globally..." (emphasis added).[57]

Both 'technological and industrial development' are oddly out of place on this list, but since no alternative to a high-tech, industrial way of life is deemed valid, very few people would find it incongruous.

A monocultural globalised economy depending on endless growth, obsessive trade, and ever-increasing levels of consumption is not only environmentally unsustainable, it is socially unstable and economically unsound. Rather than continuing to devote public resources to its creation, it would be far more sensible to support economies that are, among other things, smaller in scale and more localised. Such a shift in policy would in turn require support for infrastructures appropriate to small scale rather than large. Unfortunately, public monies are rarely invested in ways that serve anything but large enterprises operating in ever expanding markets.

Still worse is that locally adapted forms of infrastructure are being systematically destroyed wherever they still exist. In recent years, most of this destruction has occurred in the Third World, where localised economies are

reshaped to industrial contours in a process described as 'development'. In her book Ancient Futures: Learning from Ladakh, Helena Norberg-Hodge described this process as she witnessed it in a remote Himalayan kingdom:

> The development of Ladakh, as everywhere else in the world, required a massive and systematic restructuring of society that presupposed enormous and continual investments in 'infrastructure': paved roads, a Western-style hospital, schools, a radio station, an airport, and, most importantly, power installations.... At no point was it even questioned whether or not the result of these tremendous efforts constituted an improvement on what had existed before. It was like starting from zero, as if there had been no infrastructure in Ladakh before development. It was as if there had been no medical care, no education, no communication, no transport or trade. The intricate web of roads, paths, and trade routes, the vast and sophisticated network of irrigation canals maintained over centuries: all these signs of a living, functioning culture and economic system were treated as though they simply did not exist.[58]

Human-scale, locally-adapted forms of infrastructure work very well for people and the ecosystems they inhabit, as was clearly the case in Ladakh for many hundreds of years; but being of no use to a corporate-run global economy, these systems are undermined and ultimately destroyed through the imposition of a heavily-subsidized infrastructure built to industrial standards.

Infrastructure has scale

The architects of today's industrial economies are well aware of their infrastructural needs: a transport network capable of quickly and reliably delivering raw materials, agricultural commodities, and manufactured goods over long distances; large quantities of cheap energy, both to fuel manufacturing processes and to enable household consumption to rise; communications networks to permit central coordination of widely dispersed corporate activities; educational institutions to provide a workforce trained for roles in the corporate economy; and research bodies to maintain a rapid rate of technological innovation. There is no doubt that this is the agenda that drives government policy on infrastructure development today. A British member of the European Parliament expressed it this way:

> "For British industry to make the most of the business opportunities presented by the single market, we need to provide the infrastructure to cater to their demands" (emphasis added).[59]

This would not be new policy: government-funded infrastructure development has "catered to the demands" of large corporate enterprises for many years. To see what the result has been, it's worth considering one corporation, Wal-Mart, the world's largest retail business -- and by some projections, soon to be America's largest corporation.[60] The success of this firm has often been noted, and usually ascribed to the business acumen and personality of the company's founder, Sam Walton. Rarely, if ever, does the role of a publicly-funded infrastructure enter into the analysis. If it did, it would become clear that the 'everday low prices' the corporation uses to drive small shops out of business are made possible by a wide range of indirect subsidies.

In a typical week, Wal-Mart serves some 70 million customers, the vast majority of whom drive their cars to the store, sometimes from 50 or more miles away. Their journeys are made easier thanks to Wal-Mart's preferred location, adjacent to an artery of the Interstate Highway System or other limited access highway. Inside the store laser scanners at each cash register read computer bar codes, speeding customers through the checkout lines while tracking the supply of the 80,000 different items sold. These computers are connected by satellite communication links to Wal-Mart's central headquarters in Arkansas, where sales and inventory at each of the company's more than 2,300 stores are closely monitored. Further satellite links connect central headquarters with the company's 43 distribution centers and with Wal-Mart's fleet of trucks -- whose location can be pinpointed using geo-positioning technology. With distribution warehouses sited adjacent to Interstate highways, travel time is minimized for delivery trucks just as it is for customers. A growing number of Wal-Mart's products are manufactured overseas -- including more than 47,000 container shipments in 1995 alone.[61] These shipments arrive at coastal ports designed for unloading container cargoes, are transported by rail, and then transferred to trucks for the journey to distribution centers. The entire system enables the company to dispatch trucks loaded with precisely the right stock to every store as needed, keeping the shelves full at all times.[62]

In sum, virtually every product Wal-Mart sells has been transported thousands of miles on superhighways paid for by the public; the shipping terminals where foreign-produced goods arrive have been built on public land and maintained by public agencies; the satellites the company relies upon to communicate with and monitor its stores and trucks are the product of a publicly-funded space programme, and the laser technology that makes inventory tracking possible

stems from government-funded military research; the journey of virtually every customer has been facilitated by a massive public highway system; even the workforce that built, programmed, and maintains the company's computers is the product of an educational system, funded largely by the public, that focuses on training people for such high-tech roles.

Such a list could go on and on, but it should already be clear that public funds have created the infrastructure Wal-Mart requires; more to the point, even the concept of a corporate retailer on the scale of Wal-Mart would be impossible without such an infrastructure.

Not only large-scale retailers, but producers, as well, benefit from these public infrastructure investments: they move raw materials and finished products over the same transport infrastructure, coordinate their geographically-dispersed subsidiaries via similar communications networks, and rely on a publicly-funded educational establishment for personnel and for sources of technological innovation. This dependence on public transport and communications networks was indirectly revealed in a Toyota advertisement that recently appeared in American magazines. The Japanese transnational touted the 'made-in-America' content of its Camry model by claiming, "We buy the best parts in the world, no matter which state they're from." The ad diagrammed the car, proudly pointing to the different states where its various components were manufactured: even though the assembly plant was in Kentucky, the 40 manufacturers involved were scattered from one end of the country to the other, from California to Vermont.[63]

Toyota's Camry is not exceptional in this regard, and 'free trade' rules mean that components for many goods are now transported even further before assembly. US manufactured goods are so routinely fabricated in several different countries that the Federal Trade Commission was heavily lobbied by industry to change the definition of what it means to be locally-produced. The proposed rule change would have allowed businesses to expend as much as 25 percent of an article's cost of production outside the US, and still label the product 'Made in the USA'.[64]

To build up an economy suitable to the scale at which transnational corporations operate, an industrial infrastructure is an absolute necessity. Most Third World 'development' projects are devoted to creating exactly that sort of infrastructure, thus enabling those countries to climb onto the bottom rungs of the global economic ladder, while facilitating corporate access to Southern resources and markets. A recent conference on "investment opportunities" in less-developed Mediterranean countries concluded that "Poor infrastructure is a key constraint on investing in the Middle East and North Africa". Building up the energy infrastructure alone in order to encourage investment would cost as much as £250 billion, most of which would be paid by the public.[65] As in the case of Ladakh, the centralized infrastructure envisioned would meet the needs of large-scale industrial enterprises, but would undermine the livelihoods of people whose needs are now met within more localised economies.

Small-scale infrastructure

If global economies and the corporations that dominate them require an industrial infrastructure, small-scale economies built around more localised markets would have very different needs. There would be far less dependence on long distance transport, reducing the need for superhighways, airports, and shipping terminals. Since manufacturers would be producing for a smaller market, they would likely be smaller themselves, and use more human labour and less energy. Communication links to coordinate activities across continents would no longer be a high priority. Though schools would still provide information about other cultures, they would primarily be diverse reservoirs of location-specific knowledge. Research would likely aim toward the best use of local resources in a particular environment, rather than focusing on high-tech findings with applications anywhere in the world.

Even though these smaller-scale options would cost far less than building according to the corporate blueprint, governments have systematically ignored them. Like most important choices, decisions about the kind of infrastructure a society invests in are inherently political. Unfortunately, real debate on this issue is extremely rare, even in countries described as democratic. What little debate there is generally focuses on the margins: Whose backyard will the superhighway run through? What safeguards will be in place at the nuclear power plant? How can the communication tower be built without ruining the aesthetic appeal of the mountain? Meanwhile, small-scale infrastructure options that provide for people's needs -- not the needs of giant corporations -- are ignored or dismissed out of hand.

The result is a self-fulfilling prophecy: if public monies are continually invested in the infrastructural needs of a large-scale, industrial economy, no one should be surprised if that is the sort of economy that 'evolves'.

The myth of user fees

One of the arguments associated with infrastructure development is that certain investments 'pay for themselves'. In the United States, where some $90 billion of local, state, and federal funds are spent on roads and highways annually, it is often said that this infrastructure is not really subsidized, since most of that money comes from user fees -- taxes on fuel, vehicle registration fees, and the like. In the US, this was the rationale for earmarking those fees for a Highway Trust Fund, which could only be spent on further road construction.

The argument is fallacious on at least two grounds. First, the expenses that these user fees cover are only direct costs, at best.[66] Indirect costs, like the pollution caused by car and truck transport, the long-term costs of global warming, the environmental damage caused in drilling for, transporting, and refining oil, the military expense of guaranteeing its supply from the Middle East -- and many others -- are simply ignored.

Second, the fact that a given form of infrastructure pays for itself in narrow economic terms doesn't mean that society is better off for having invested in it. If the state were to allocate $20 billion to equip each neighborhood with a state-run brothel and crack-cocaine outlet, would it be assumed that this was a wise use of public funds just because the money could be recouped through

user fees? Probably not, but the logic is no different from that which justifies other infrastructure investments simply because they generate enough taxable transactions to pay for them.

The shape a society takes tomorrow depends in part on the kinds of infrastructure investments it makes today. Any number of different infrastructure can pay their own way, but citizens must first decide upon the kind of future they want to bring about. Today almost all infrastructure investments are leading toward larger scale, greater separation between producers and consumers, and a world further dominated by corporations.

Chapter 4: Subsidizing Long-Distance Transport

"If you've got it, a lorry delivered it."

Tesco leaflet supporting 'The Good Lorry Code'[67]

When the typical American family sits down to dinner, the food on the table has traveled, on average, some 2,000 miles. America is not particularly exceptional in this regard among industrialised countries: a recent study in Germany, for instance, revealed that the ingredients in a single container of yoghurt had come from four different countries, and required 1,000 km of transport.[68] Clearly, people in these countries are dependent for food -- the most basic of all day-to-day needs -- not on their local economy, but on a geographically huge economy that is increasingly international in scope.

As was argued in the last chapter, large-scale economies depend upon infrastructures suited to that scale. The ways in which these infrastructures were created varies from country to country, but a detailed look at a particular case reveals the sorts of forces that have been involved almost everywhere.

The transport system in the United States is a particularly instructive example, in part because a single national US economy could never have been forged from such a vast expanse without a reliable and extensive long-distance transport network -- one that is today the largest in the world.[69]

The railroad crusade

The decline of railroads as a medium for passenger transport in America has led to the mistaken belief that rail is no longer a significant part of the nation's overall transport picture. But in 1994 alone, railroads were responsible for more than 1.2 trillion ton-miles of freight, more than any other mode of intercity transport. The use of railroads for freight transport is also growing: since 1960, the ton-miles of freight accounted for by rail in the US has more than doubled.[70]

America's rail infrastructure is clearly geared to long-distance transport, rather than transport within more localised economies. The average length of haul in the US was over 800 miles in 1994,[71] and hauls less than 500 miles are unusual.[72]

How did this long-distance rail network come about? Partly responsible was an ideology of growth and expansion that made a cross-country rail link into a

national crusade. Vested interests took advantage of that ideology, but it was government support that really made a nationwide rail system possible.

Railroad building in the US began in the 1820s. Thousand of miles of track were laid in the next few decades, although most of the lines served only local markets. But by the middle of the century there were calls for expansion into newly-acquired western lands, a political and commercial urge that meshed seamlessly with popular Enlightenment attitudes about the relationship between Man and Nature. It was considered America's God-given duty to subdue and civilize the untamed wilderness, and her "manifest destiny to overspread the continent allotted by Providence... ".[73]

There was also a pragmatic awareness of the role rail transport could play in tying together the huge nation, which was already beginning to fracture along lines of natural geography and local economic interest.[74] If America's dispersed local economies were to be amalgamated into a single, national economy, a nationwide transport network would be required. An enthusiastic advocate of a trans-continental railroad made the argument this way:

> "Let this road be constructed, and there will be no North and no South, no East and no West, but our country will be everywhere!"[75]

Immediately following the Civil War, the federal government officially embraced the idea of connecting the eastern and western halves of the continent by rail, and put vast resources at the command of the corporations that would construct the line. Over 183 million acres -- an area larger than California and Florida combined -- were transferred from public ownership

into the hands of railroad corporations in just a few decades.[76] This land -- lying in alternate sections six miles deep on either side of the track -- was to be sold to settlers, with the proceeds funding railroad construction. Even when sold at a few dollars per acre, it was a bonanza for the railroad companies: land given to the Union Pacific and Central Pacific railroads for their sections of the transcontinental rail line, for example, generated over $27 million.[77] This was a huge sum, almost four times as much as the US government paid Russia two years earlier for the entire territory of Alaska.[78]

Powerful monied interests -- not only railroad moguls but all those who stood to gain from economic expansion -- pushed many projects through, often by bribing legislative officials.[79] Sometimes politicians were also principals in railroad corporations: Leland Stanford, one of the owners of the Central Pacific railroad, was at the same time governor of California. Vested interests also made liberal use of the media of the day to encourage settlers to head for the 'paradise' awaiting them further west. Kansas -- well-known today for its shortage of rainfall, scorching hot summers, winter blizzards, and occasional tornadoes -- was promoted to unsuspecting settlers as home to the nation's most desirable climate.[80]

The US government not only subsidized the building of railways, but also used its Army to protect trains and settlers from the Native Americans whose lands were being taken. Thus, while America's industrial economy was expanding in scale and geographic scope, it was doing so at the expense of countless indigenous cultures, whose ways of life were, for the most part, obliterated.

Thanks to the railroad boom, a number of business interests grew enormously in both wealth and power. Railroads were America's first Big Business, and many of the original railroad corporations are still in operation, including Union Pacific, today one of the world's largest corporations. Financiers like J.P. Morgan -- whose name survives in another Fortune 500 corporation, the Morgan Stanley Group -- also profited handsomely.[81] But more significant than the benefits accruing to individual corporations was the overall expansion of the American market. Soon, a wide range of raw materials, manufactured goods, and agricultural products would be traveling long distances relatively quickly by rail, making it possible for businesses to expand their scale in tandem with the geographical growth of the market.

America's railroad system was not designed to meet the internal needs of localised economies -- and in fact one of its primary goals was to absorb those economies into a single national one. Today as in the past, this highly subsidized transport infrastructure most directly benefits private interests involved in long-distance trade and huge markets.

Highway transport

During the past 75 years, America's long-distance transport infrastructure has expanded exponentially, largely because of the construction of an immense highway network. By 1994, there were over 175,000 miles of highways in the federal system alone, including 45,000 miles of Interstate Highways; various state systems contributed an additional 97,000 miles of 'principal arterial' highways.[82] This immense system has been built and maintained almost exclusively at public expense. The sums involved are not insignificant: over $55

billion dollars in state and federal funds were expended on roads in 1994 alone.[83]

As the last chapter indicated, major corporations rely heavily on this system: altogether, trucks traveled a total of 182 billion miles in 1994 on the Interstate highways alone.[84] Total intercity truck transport accounted for 900 billion ton-miles of freight that year. As with rail, the trend is upward: the ton-mileage of truck transport has grown more than three-fold since 1960.[85]

The present form of America's highway transport infrastructure is not only the product of massive public subsidies: it is also, to a large degree, the result of a conscious corporate plan.

What's Good for General Motors

Although a federally-funded macadamized road between Washington and Ohio was built as early as 1817, most roads in the US remained unpaved and suitable only for fairly short, local trips until well into the 1900s. In 1893, a headline in the Washington Post read, "Our System of Highways -- It is the Worst on Earth and Should Be Reformed."[86]

Despite the Washington Post's admonition, roads were not considered a high priority, even by the end of the century: when the office which later became the Federal Highway Administration was first established, it consisted of just two people with an annual budget of $10,000.[87]

As late as 1922 only one American in ten owned a car; most people had no compelling need for one either, since electric streetcar lines were both extensive and reliable, and made travel possible virtually anywhere within most cities at very low cost.[88] In some cases the ends of one town's lines even linked up to that of another -- enabling one to travel, albeit slowly, all the way from New York to Boston and other cities by streetcar. Even so, the focus of these systems was local, not long-distance travel.

Starting in the mid-1920s, however, these local systems were bought up and systematically destroyed by a consortium of automobile-related companies, including General Motors (GM), Standard Oil of California, Firestone Tire, and others. By 1946 National City Lines, the front company for these corporations, controlled public transit systems in over 80 cities. In every case the local transit system was intentionally allowed to deteriorate. Service was slowed, then cut. Rails were torn up, streetcars removed from service and burned. Many of these were replaced by GM's buses -- with public relations campaigns portraying the shift as 'progress'. But public transit was systematically being made inadequate; cars became no longer a luxury, but a necessity.[89]

The government may not have directly supported this process, but it certainly did little to stop it. By the time antitrust and conspiracy charges were filed in 1946, it was already too late: the corporations had destroyed local transportation systems that, by one estimate, would today cost as much as $300 billion to build. Although the companies responsible were found guilty of conspiracy, they were each fined only $5,000. For his role in the crime, the Treasurer of GM was fined the princely sum of one dollar.[90]

The destruction of public transportation was a boon for the automobile and oil interests, but the continued growth of these companies would be limited unless more roads and highways were built. Lobbying groups were formed, including the National Highway Users Conference, headed by the president of GM. Slick promotional films and advertising campaigns pointed to the nation's increasingly congested roads, and urged people to support the building of new ones. One GM film showed people stuck in traffic honking their horns. "What's a citizen gonna do?" the narrator asks:

> "Don't honk your horn; raise your voice. Ask for better highways and more parking spaces. It's your country. Give yourself the green light."[91]

These efforts had the desired effect: the nation's highway infrastructure, including a Federal Highway system composed of thousands of miles of two-lane roads, was continuously expanded at public expense. Separate state-funded highway systems also grew rapidly.

But highway building got its biggest boost when General Motors president Charles Wilson was appointed Secretary of Defense. During his confirmation hearing in 1953, Wilson argued that since "what's good for General Motors is good for the United States", there was no conflict between his loyalty to GM and his responsibilities to the nation. Wilson put this belief into practice by pushing for a nationwide system of superhighways, on the grounds that it was crucial for national security. In 1956, Congress authorised federal funds for a 41,000 mile Interstate Highway System. At the time, it was described as "the greatest public works programme in the history of the world."[92]

It may seem that America today is already covered in tarmac, but road-building continues unabated. With the Interstate Highway System nearly complete, a new National Highway System has been proposed which would make "improvements" to 156,000 miles of existing highways and add 21 new "high priority corridors". The cost will be some $6.6 billion.[93] Much of the federal financing for these roads has come from a Highway Trust Fund into which gas taxes and other user fees have been directed. For many years these funds could only be used to build more roads, creating a positive feedback loop: more driving led to more funding for roads, which inevitably led to still more driving.

Just as the long-distance railroads served the interests of large-scale business in general, the highway transport system has benefited more than just the the automotive, oil, and road building corporations that most actively promoted it. Among their other impacts, these public investments make it much easier to transport goods to and from anywhere in the nation, offering advantages to any business large enough to exploit huge markets. In fact Charles Wilson might have more accurately said, "what's good for GM is good for all large corporations."

As Robert Reich notes, the potential repercussions of heavily subsidized highways were never part of the public debate:

> "The manifestly real possibility ... that [they] might also generate sprawling suburbs and shopping malls, harm downtown retailers, fatten the construction industry, boost auto sales, create an entire trucking industry, displace barges and railroads, and radically lower the cost of

transporting and distributing goods across America -- was not openly discussed."[94]

One can be certain, however, that many of these effects were discussed among the powerful corporate interests that benefited from them and consciously promoted them.

Corporate-friendly skies

America's economy could expand only so far if its transport infrastructure were limited to rail and highways. As international trade has increased, the importance of air transport has grown apace. In 1994, over 11 billion ton-miles of freight were carried by air in the US -- more than 20 times what was carried by air in 1960.[95] Obviously geared towards long-distance transport, the average length of haul by air is now over 1,300 miles.[96]

A global economy also requires people to travel more, and to travel longer distances. For the US, the number of passenger-miles flown in 1994 was more than 12 times what it was in 1960; in the last ten years alone, passenger-miles flown increased by almost 40 percent.[97] Over half a billion passenger boardings in the US were expected in 1997, and the airline industry projects that number to increase by half in the next decade.[98]

Many countries have built up their national airlines as industries wholly- or partly-owned by the state. This has been the case not only in the formerly-communist world -- the Russian government, for example, still owns 51% of Aeroflot[99] -- but in capitalist countries as well: the Dutch government owns 38

percent of KLM airlines, and until recently Japan owned 50 percent of Japan Air Lines; Germany was once a majority owner of Lufthansa, and Britain owned British Airways until it was 'privatized' in 1987.[100] Most airlines in the less-industrialised world were built up by the state, and many are still state-run.

In the US, however, airlines have always been independent businesses. Nonetheless, taxpayers have made -- and continue to make -- huge investments in the infrastructure on which air transport depends. For example, all major airlines rely on a government-funded air traffic control network -- a massive technological infrastructure employing 17,000 people. The annual budget for the Federal Aviation Agency, whose duties include air traffic control, safety inspections, and airport improvement, is well over $8 billion.[101]

Further subsidies for air transport are embedded in military research spending and government research and development funding. These subsidies benefit American aerospace companies, which in turn provide planes to all major US airlines. The value of that assistance is estimated at $1 billion annually.[102]

Another form of hidden subsidy comes with the training of pilots for commercial air fleets. In 1996 for instance, most of the 500 pilots that resigned from the US Air Force did so because they were lured to commercial airlines, which pay trained pilots higher salaries than the military for work that is less demanding.[103] The Air Force estimates that over a period of nine years, the training it has provided each pilot that 'defects' to an airline costs the public $5.9 million.[104]

Airport subsidies

Each of America's 400 or so major airports have received large public subsidies. Even today, airports pay no federal or state corporation taxes and are exempt from local property taxes; they receive federal grants for capital improvements, and can borrow at subsidized rates.[105] In the early days of aviation growth, start-up costs for new airports were often paid for by the city where the airport was located. These expenditures were usually justified on the grounds that an airport would be an economic boon to the community. This was New York City mayor Fiorello Laguardia's rationale for using the city's tax money to build Idlewild (later Kennedy) Airport in 1945:

> "The greatest airport in the world is rising from the meadows at Idlewild in New York City. It will cost $71 million. Filling grading, planting, drainage, field lighting utilities, runways, taxiways and aprons will cost about $35 million. The administration building, together with loading docks, apron and parking spaces will cover well over three hundred acres and cost about $10 million.... The airport will bring millions of dollars monthly in commerce, business and traffic to the City of New York.... The airport is a costly undertaking, yet it will be one of the best investments the City ever made."[106]

Even though $71 million was a huge sum -- more than half a billion in today's dollars -- the final cost was over five times La Guardia's estimate.

Perhaps air travel today is easier and less expensive for everyone, but the subsidies for air transport have primarily benefited corporations, particularly those engaged in global trade. The Washington-based Reason Foundation, for

example, has estimated that business jets alone use about 20 percent of the capability of the nation's air traffic control systems, and well over half of the FAA's control tower services.[107]

But nowhere is the air transport subsidy for Big Business more starkly exposed than in a rural corner of Arkansas, where an airport with runways long enough to handle fully-loaded cargo-carrying 747s is taking shape. The federal government is expected to pick up $90 million of the airport's projected $145 million tab. According to investigative journalists Ken Silverstein and Alexander Cockburn, the beneficiaries of this government subsidy would include Arkansas' giant poultry companies, Tyson Foods, Hudson Foods, and Peterson Industries. According to the feasibility study approving the project, "If competitive air freight rates were available, these companies estimate that Japan would become a boom market for U.S. fresh chicken products." Another beneficiary would be Wal-Mart, which, "Given dependable air service available at competitive rates, would import a number of electronics, men's and women's fashion apparel product lines by air." A third major beneficiary would be the J.B. Hunt Transport Co., the largest overland cargo hauler in the United States.[108]

As for local people living in the rural communities nearby, this federally-subsidized airport certainly doesn't have their needs in mind: "Most of the people here have never been in a plane", according to Jay Fulbright, who owns a farm near the site.[109] Meanwhile, about 50 families will be forced off their land to make way for the 2,700 acre airport.[110] "Big business interests, that's the only reason this is coming about", Fulbright concluded.

This project is just one of many funded by an Airport Improvement Programme with an annual budget of over $1.3 billion.[111] The subsidy involved seems especially outrageous since it's clear that the project benefits only a few big corporations. But even when it can be claimed that a given project will spur economic growth and help the 'local economy', virtually every such project inherently subsidizes long-distance transport, and the major corporations that depend on huge markets.

Perhaps even La Guardia, were he alive today, would reconsider the wisdom of subsidizing New York's long-distance transport network so heavily. Today New York is a center for international trade, but its local transport infrastructure is crumbling; it is home to numerous flourishing Fortune 500 corporations, but many of its citizens have no job and nowhere to live. In any event, New York's policymakers are having no such second thoughts: public agencies will be spending $4.8 billion to "modernize" the city's airports in the coming years.[112]

Small-scale alternatives

The advantage that a cheap and reliable long-distance transport system gives to large-scale businesses is one reason why they have been able to supplant so many smaller enterprises; it also helps explain how the global economy is able to overrun so many diverse local economies around the world.

If society has other goals in mind than promoting corporate growth, then support can still be redirected towards transport infrastructures that serve the needs of smaller enterprises operating in more localised economies. It's not too late to shift course.

A simple exercise in Worldwatch magazine demonstrated how much less expensive such investments would be. The $300 million budgeted for a single Interstate highway interchange in Virginia, for example, could instead provide each of twenty different towns and cities with a 100-mile network of paved, off-street bicycle paths. And the funds intended for a $10 million highway expansion in Eugene, Oregon, could instead provide every Eugene resident over the age of eleven -- all 93,000 of them -- with a new bicycle, basket, lights, locks, and raingear.[113]

Some communities are rediscovering transport modes long ago abandoned in the quest for modernity. Bristol, Vermont, for example, recently awarded its trash collection contract to a local citizen who makes the rounds with a horse-drawn wagon. His bid was competitive with those from contractors using the latest mechanised equipment, but his horses had many other advantages: they are far quieter on their early-morning rounds than large trucks; they use local, renewable resources (hay and oats) for fuel, rather than imported oil; and they are non-polluting, since the only wastes they produce are biodegradeable -- and a valuable source of organic fertiliser for nearby farms.[114]

This is not necessarily an argument for the use of bicycles or horses everywhere in the world. If priority is given to the needs of local economies rather than to long distance trade, and if locally-available resources are used to their full potential, then transport systems will tend to differ widely from place to place. This is only is as it should be. It means communities are adapting to their local environment and their own internal needs, rather than conforming to the

imperatives of a global economy -- one in which the same corporate plan is recklessly followed everywhere.

Chapter 5: Communicating globalism

"[Merrill Lynch recently] signed a $400 million contract with the AT&T Corporation to manage Merrill's vast communications system... [A]s it tries to build networks to link its 54,200 employees in 870 locations around the world, [Merrill Lynch] has become an archetype of the customers that are driving the evolution of the high-technology industry."

New York Times[115]

"The Defense Satellite Communications System (DSCS) is an essential part of the global Defense Communications System. It is... designed to provide vital command, control and communications service to the United States and Allied Forces throughout the world..."

US Department of Defense Fact Sheet

"Reach out and touch someone."

AT&T advertisement

Modern communication networks are publicly promoted as a means to 'bring people together': advertisements typically show close friendships sustained thanks to the telephone, or children gaining an understanding of faraway lands through documentary television programmes or the Internet. If these were their most important effects, however, it is unlikely so many billions of dollars would have been invested in them. Far more significant is their ability to expand the reach of industrial economies, transnational corporations, and governments.

Effective communications networks are such a linchpin of industrial economies that many countries have nurtured this infrastructure under the government's wing. British Telecom was a state enterprise until 1985, and the company was not fully privatized until 1993. Japan's Nippon Telephone and Telegraph, the world's most valuable company, was state-owned until 1985. Other countries still retain partial ownership of their communications infrastructure: Telefonica de España, for example, is 32 percent owned by the Spanish government, and the Italian government owns 53 percent of STET, the country's largest telecommunication company.[116]

Space is the place

Even in countries like the United States, where the communications infrastructure has largely been in private hands, the public has provided much of the research and development funding needed for its expansion and growth. One need only consider the vast sums spent by advanced nations on their various space programmes -- without which orbiting telecom satellites would be no more than a fantasy -- to comprehend the size of the subsidy involved.

The 'space race' between the United States and the former Soviet Union, for example, ended up costing a sizeable chunk of the budgets of both countries. Before the US had even achieved suborbital manned flight, the National Aeronautics and Space Administration (NASA) was already the country's seventh largest single department.[117] A large portion of the military budgets of both countries was devoted to gaining the ability to launch and guide their arsenals of nuclear-tipped missiles -- and to defend against them. Some of the non-military fruits of that research include the international reach of satellite television networks like MTV and Star-TV, banks with ATM 'branches' in every country, and the global proliferation of cellular phones.

Having funded the research and development needed to place satellites in orbit, governments are now stepping back and handing the keys over to corporations. Typical of the trend is a project called Sea Launch, in which satellites will be launched from a modified oil-drilling platform positioned on the equator. The project is funded by an international consortium of companies, including the Boeing Commercial Space Company (which benefited from decades of NASA funding), a Russian aerospace company and two Ukrainian rocket makers (all three of which are products of the former Soviet Union's space and military programmes). Sea Launch expects to charge $40 million per launch, undercutting the $55 million charged by Arianespace (a consortium heavily subsidized by several European governments), and the $50 million per launch charged by Lockheed Martin (whose expertise comes from years of military contracts funded by the US government).[118]

By the end of 1996 there were already close to 200 commercial satellites orbiting the earth. But the world's giant telecommunications corporations are

planning to bring that number to over 1,000 in the next few years. US-based Teledesic plans to launch 840 satellites alone to make their mobile communications network possible. Motorola is planning to launch 66 satellites for their 'pocket telephone' project.[119]

Public funding is also behind many of the computer technologies that make global communications possible, including the Internet, originally a US military project. As Nathan Newman of Progressive Communications points out:

> "The Internet is in many ways the product of central planning in its rawest form: planning over decades, large government subsidies directed from a national headquarters, and experts designing and overseeing the project's development.... The comparison has been at times to the interstate highway system, but the analogy would hold only if employees of the federal government had first imagined the possibility of cars, subsidized the invention of the auto industry, invented the technology of concrete and tar, and built the whole system...."[120]

Regulating the airwaves in the corporate interest

Governments have also created a regulatory environment within which corporate-dominated communications enterprises thrive. In the United States, for example, the Federal Communications Commission (FCC) coordinates and licenses thousands of commercial users of the airwaves, and alots segments of the electromagnetic spectrum to private interests -- from radio and television networks to cell phone and pager companies.

Like most regulatory agencies, the FCC is heavily biased towards the large and global. For example, FCC rules prohibit any radio station with less than 100 watts of power from broadcasting. Though such low-wattage 'micro-radio' stations are ideal for very localised, decentralised, and inexpensive broadcasting, the FCC has gone to great lengths to insure that corporate-funded messages continue to dominate the airways. According to a press release, micro-power broadcaster Jim Brewer's station in Tampa, Florida was shut down in no uncertain terms by a 20 person Multi-Jurisdictional Task Force led by the FCC:

> "With automatic weapons trained on them [Brewer and his wife] were ordered to the floor where they were handcuffed face down with gun muzzles at their head. For the next 12 hours they were detained in their own home, not even allowed to go to the bathroom alone, while agents stripped their home of anything remotely related to radio transmission equipment. Police cordoned off the block around their home, the site of the micropower broadcasting station, and brought in a crane to dismantle his broadcasting tower."

While banning small, local, non-commercial broadcasting, the FCC is bending over backwards to grant corporate communications companies rights superceding those of local communities. Having already ruled that all commercial television stations must be capable of digital broadcasting by 2002, the FCC is aware that at least 350 stations will be forced to build new communications towers, ranging in height from 1,000 to 2,000 feet. Not surprisingly, many of the communities where such towers are to be located are

vigorously protesting. In response, the FCC is considering a rule that would prevent local planning and zoning boards from restricting the 'right' of communications companies to site communications towers where they want.[121,122]

The airwaves: public or private?

In the early years of radio a healthy public discussion ensued about whether the airwaves should be used commercially or retained for use in the public interest. Clearly, the corporate world emerged victorious. In the US, a recently-passed Act of Congress sealed that victory by effectively deregulating all communications industries and allowing the market, not the public interest, to determine how the communications infrastructure develops in the future. According to media expert Robert McChesney, this law "is widely considered to be one of the most important federal laws of this generation". And yet,

> "the debate surrounding the 1996 Telecommunications Act was a farce. Some of the law was actually written by the lobbyists for the communication firms it affects. The only 'debate' was whether broadcasters, long-distance companies, local telephone providers, or cable companies would get the inside track in the deregulatory race."[123]

The possibility that the public, not corporations, should control the airwaves was not even considered. One effect of the new law is to hand over to media corporations additional segments of the broadcast spectrum. Estimates of the value of this giveaway range from $11 billion to $70 billion.[124]

Corporations need to communicate

The ability to communicate instantaneously across continents is hardly necessary in businesses that are small and local. But huge transnational corporations need to maintain tight central control over their far-flung enterprises, and so a sophisticated worldwide communications infrastructure is an absolute necessity. Manufacturers from IBM and Daimler-Benz to Nike and Unilever must coordinate deliveries of raw materials and manufactured components from numerous subsidiaries and independent contractors, as well as arrange shipments of finished products to middlemen, distributors, and corporate sales outlets. Giant retailers like Home Depot, Tesco, and Continente must monitor inventory at hundreds of locations, sometimes thousands of miles apart, and coordinate ship, rail, truck and aircraft deliveries from both domestic and overseas suppliers. Every transnational corporation needs to communicate decisions made at corporate headquarters to subsidiaries and branches in different countries, and quickly transfer capital back and forth.

High speed computers linked to satellite communications networks also enable banks, financial service companies, currency speculators, and others with global investments to shift vast amounts of capital from continent to continent at the stroke of a computer key. David Korten describes how

> "... an individual at a computer terminal can maintain constant contact with price movements in all major markets and execute trades in any or all of them. A computer can be programmed to do the same without human intervention, automatically excecuting transactions involving billions of dollars in fractions of a second."[125]

Thanks to such technologies, currency valued at $1.3 trillion was exchanged each day in 1995 -- 30 times more than the daily GDP of all the developed countries in the world combined.[126]

Do small shopkeepers, small family farmers, or producers for local markets require such a highly developed communications infrastructure? Hardly at all, and in fact their livelihoods are threatened by enterprises that can make use of it. While they slip further and further behind, their taxes continue to help maintain the infrastructure that is in part responsible for their difficulties. And as usual, they are told that natural evolution is responsible.

On another level, this is happening to entire cultures as well. From Chiapas to East Timor, small and local economies are being pushed aside by governments seeking a more prominent place in the global economy, more uniformity among their populations, more land to devote to producing for global markets. All too often, high-tech military technologies -- which depend on modern communications networks for intelligence, planning, and execution -- are employed to do so. The US victory in the Iraq war, aimed at preserving the corporate-led New World Order, was also largely a product of such high-tech capabilities. And the recent cruise missile strikes against targets in Sudan and Afghanistan, indicating that the war against terrorism will also be fought using these technologies, has given new meaning to AT&T's slogan, "Reach out and touch someone".

Creating consumers

A worldwide communications web is crucial for corporations in another way: it gives them the ability to transmit their commercial messages to hundreds of millions of people, day and night, from one end of the planet to the other. It has often been observed that the real purpose of media like television is not to deliver entertainment to the public, but to deliver the public to advertisers. In the global economy, this is truer than ever.

Advertising is itself a product of industrial economic expansion. When the first model-T rolled off the assembly line at Henry Ford's factory in Detroit in 1909, the event was a turning point not only for the automobile industry, but for virtually every other industry as well. The assembly line made it possible to mass produce virtually any item faster, more cheaply, and in greater quantities than ever before. American industrialists, who had previously sought to expand production, now had to think in terms of expanding consumption as well. After all, there would be no point in mass-producing millions of items that could only be sold in a market with a buying capacity measured in the thousands.

Industrialists thus needed to expand significantly the markets for their goods. This could be accomplished in part by amalgamating smaller local economies into much larger ones, something the expanding transport infrastructure was already making possible. Regional differences among those markets, however, had to be overcome. America was a nation of immigrants and exhibited little uniformity: local, regional and ethnic tastes and preferences differed widely. But advertising offered businesses the means to homogenise those tastes. Desires could now be mass-produced along with the products to satisfy them.

Advertising also enabled industry to make wholesale changes in popular ideology and worldview. As Stuart Ewen has shown in his important book Captains of Consciousness, advertising altered long-standing American values stressing frugality and self-reliance, replacing them with a new cultural norm based on conspicuous consumption and a preference for store-bought over home-made products. Through increasingly sophisticated advertising techniques, "Excessiveness replaced thrift as a social value", and entire populations were invested with "a psychic desire to consume."[127]

In less than a generation consumerism had been embraced by virtually the entire country. This 1953 advertisement for Gimbels, a New York department store, proclaimed the new ideology:

> "Economic salvation, both national and personal, has nothing to do with pinching pennies.... Economic survival depends upon consumption. If you want to have more cake tomorrow, you have to eat more cake today. The more you consume, the more you'll have, quicker."[128]

The spread of this ideology was not limited to businesses and their advertising allies. That same year, the chairman of President Eisenhower's Council of Economic Advisers claimed that the American economy's "ultimate purpose" was "to produce more consumer goods."[129]

Over the years, advertising has become more sophisticated, more effective, and more pervasive. It has been estimated that the average American is exposed to 16,000 commercial images daily -- not only in magazines and newspapers and on television and radio, but plastered to walls, cars and trucks, food packaging,

windows, scoreboards, pens and pencils, sports arenas, supersonic jets, and anywhere else a commercial message can be embedded.[130] The trend has reached absurd levels. One of the sad miracles of modern life is the way children, teenagers, and adults attempt to express their 'identity' by wearing clothes conspicuously emblazoned with corporate logos. The practice has become so commonplace in America that The New York Times Magazine recently ran a 'style' article featuring young children modeling Tide sweatshirts and XXXXXXXX teeshirts. And while the idea of launching huge 'billboards' into earth orbit was considered slightly mad when it was proposed a few years ago, the notion may prove to be more prophecy than lunacy: the Russian space station Mir and its crew have already been pressed into service promoting such products as Pepsi-cola and Israeli milk.[131]

Televising consumerism

Today, television is the medium by which the manipulation of individual desires is most effectively carried out. In America, advertisers seek to influence children as young as two with their commercial messages. Children younger than five years old watch an average of three and a half hours of television every day; adults watch nearly five hours. In a year the average American adult thus sees some 21,000 televised commercials.[132]

As technology critic Jerry Mander points out, television is being used by corporations to spread the gospel of consumption to every corner of the planet:

> "By its ability to implant identical images into the minds of millions of people, TV can homogenise perspectives, knowledge, tastes, and desires,

> to make them resemble the tastes and interests of the people who transmit the imagery. In our world, the transmitters of the images are corporations .... And satellite communications is the mechanism by which television is delivered into parts of the planet that have, until recently, been spared this assault."[133]

It is not only the specifically commercial content of television that is so effective in assaulting these distant parts of the world. The consumer culture also invades the Third World through the way of life shown in between the commercials. As S.M. Mohamed Idris of the Consumers' Union of Penang has written,

> The consumer culture of the North now pervades almost all aspects of life in the South. This culture is in reality a way of thinking and a way of life generated by advertisements, cinema shows, pop songs, magazines, comics, and other channels of the mass media.... As a result of this bombardment, the consumer is made to feel insecure unless she smokes a cigarette, unless he buys a certain brand of haircream, unless she uses a certain brand of lipstick, unless they change motorcars once every two years, unless the colour of the curtains at home matches the colour of the carpet.[134]

Corporations looking to homogenise tastes in order to expand their markets fully understand this power of global media. Anthony J.F. Reilly, CEO of the H.J. Heinz corporation, accurately declared that in the Third World, "Once television is there, people of whatever shade, culture, or origin want roughly the

same things."[135] According to a development analyst, "India's markets seem more accessible" now that corporate messages are arriving via satellite:

> "...half of the 35 million television sets now in India receive satellite or cable channels, providing a new window on the outside world for more than 60 million people and creating a mass consumer market almost overnight." (emphasis added).[136]

As Robert McChesney puts it, "the corporate media are carpet-bombing people with advertising and commercialism."[137] MTV reaches more than a quarter of a billion households on five continents, enabling corporations to globalise the 'youth market' for Nike sneakers, Pepsi-cola, and Levi's jeans.[138] American television shows like "Dynasty" and "Baywatch" are broadcast to the most remote corners of the planet, giving people a distorted impression of modern urban life, and creating a whole new range of desires for corporations to fill. And CNN, which reaches 145 countries from Bangladesh to Zimbabwe, ensures that every culture now gets the corporate spin on world events.[139]

Those who believe the Internet will be a global medium run by and for the people should think again. As AT&T's director of Internet services points out, the Internet may become the best advertising medium yet: "If it's done well, you won't feel there's any tension between the consumerism and the entertainment", he says.[140]

Shifting direction

While today's modern communication infrastructure is custom-built for the needs of governments, the military, the financial world, and corporations, limits on its reach are often seen as challenges to individual rights. By this twisted logic, advertising becomes a form of 'free speech'; bombarding the South with distorted, culturally-homogenizing images becomes the 'free flow of information'; people chained to their computers, faxes, modems, cellular phones, and beepers become exemplars of the 'convenience of modern life'.

Similarly, the available options are often seen to depend on purely individual choices: simply turn off your TV, or choose to ignore its messages, for example. On some levels, to be sure, personal decisions must be made; but at other levels public policies are forcing changes on people in which they have no real choice at all. This is particularly true in the South, where long-standing cultural traditions can be erased in a generation by a steady diet of Disney, Rambo, CNN, Star-TV, and corporate advertising.

There are other questions to ask, questions whose answers depend on how much faith we have in the industrial model. Do corporations have an inalienable right of access to the broadcast spectrum? Should they be allowed the unlimited right to position their communications satellites where they can reach everyone on earth? Do cultures -- and individuals -- have the right to declare themselves offlimits to the commercial messages others wish to send them? The answers to these and similar questions have a significant bearing on the nature of the world we are making.

Chapter 6: Energy

"Economic growth and increased energy use are inseparable...."

Richard Douthwaite, The Growth Illusion[141]

Though modern societies never seem to have enough energy, the earth is actually awash in it. Each year the sun showers our planet with 15,000 times as much energy as humans currently use. Much of that energy is reflected back into space, but the remainder powers photosynthesis, runs the hydrologic cycle, and generates weather systems -- thereby creating such renewable energy supplies as wind energy, hydro-power, biomass fuels, food for human and animal power, as well as the direct use of solar energy itself.[142]

If the human need for energy were largely limited to such tasks as illuminating and heating homes, cooking and refrigerating food, pumping water, providing local transport, and powering small-scale farm and manufacturing equipment, then diverse and decentralised renewable energy supplies would probably be quite adequate. This was, in fact, the situation everywhere before the era of fossil fuels. Farmers in the Himalayas, for example, devised small water-driven wheels to mill grain; they employed solar energy for crop drying; and they used draft animals for transport and agricultural needs. In forest-rich New England, wood was the source of cooking and heating fuel for many generations, while water power provided energy for numerous small-scale industries, from milling grain to sawing lumber. Windmills for pumping water and for other agricultural uses once dotted rural landscapes throughout Europe. In these economies, the demand for energy was as decentralised as the

supply, and the scale was small enough that locally available energy could provide for most needs.

But industrialised economies demand vastly greater quantities of energy. International trade and long-distance transport require huge fleets of transport vehicles -- cars, trucks, trains, ships, aircraft -- all of them energy guzzlers. Transport, in fact, is the most energy-intensive sector of industrial economies: in Britain, the energy used for transport is more than ten times that required for food, clothing, and shelter combined.[143]

Another reason industrialised societies consume so much energy is that they are highly urbanized. Almost everything consumed in urban centers -- from food and water to building materials and clothing -- originates elsewhere, and so it is all embedded with a significant amount of transport energy. What's more, the centralized millions in today's urban conglomerates are easier for marketers and advertisers to reach, and so the psychological pressure for a high-consumption lifestyle is that much greater.

While small-scale, decentralised economies can take advantage of a wide range of local energy sources, industrial economies are far more limited in the kinds of energy they can use: every major form of transport in industrial societies, for example, is powered by petroleum. Urbanisation, meanwhile, makes the use of decentralised renewable energy sources far more difficult. Instead cities must depend on centralized power plants that turn fossil-fuels, nuclear energy, or hydro power into easily-deliverable electricity.

Renewable energies in their various forms are distributed fairly evenly around the world -- one place may have more abundant supplies of biomass but less wind, another more solar but less hydropower -- but the forms of energy needed for industrialisation and urbanisation are very unevenly distributed. This has not only been a famous source of international conflict but has spawned an immense worldwide trade in energy: almost half of the world's annual consumption of oil, 14 percent of its gas, and 11 percent of its coal are traded internationally. At the start of this decade over a million kilometers of trunk pipelines were required for transporting natural gas, and an additional 400,000 kilometers of pipelines for oil. Transporting crude oil from source to refinery requires, among other things, some 2,600 tankers plying the high seas.[144]

Subsidizing the energy infrastructure

As industrial economies have expanded and the South has been 'developed', energy use worldwide has steadily risen. In 1996 the use of oil, natural gas, and coal all set new records[145], and construction began on more new nuclear reactors than at any time in the previous decade.[146] The link between rising GDP and increased energy consumption is axiomatic for economies on the industrial development track, and government policies everywhere focus on ensuring a steady -- and rising -- energy supply.

Like transport and communications, energy is so vital to industrialisation that many countries have built up major portions of their energy infrastructure at public expense. In Britain the electric industry has long been government-run, although it is now being sold off to the private sector -- often at a loss[147]. In

France, where nuclear generating plants provide much of the country's power, the state still controls the electric industry. The Great Whale project, a river diversion project in Canada that has been opposed for years by indigenous groups and environmentalists, is a project of Hydro Québec, a huge energy conglomerate wholly owned by the Québec government.[148] In almost every Third World country, the domestic energy infrastructure is in government hands.

In the US, the energy sector is largely run by private-sector corporations, but massive subsidies have been provided to keep companies healthy, profitable, and growing. The watchdog group Alliance to Save Energy has estimated that the energy sector is subsidized at the rate of $21 billion to $36 billion annually.[149] For the oil industry alone, subsidies and tax breaks have been in place for some 75 years, and have amounted to many billions of dollars. Another public interest group, Citizens for Tax Justice, estimates that just one tax break -- the percentage depletion allowance -- will cost the public Treasury $4.2 billion over the 1995-99 period. This is actually an improvement over earlier years, since the allowance was even greater up until 1975: in that year alone, the tax break amounted to $3 billion.[150]

While the risks to the overseas operations of US oil companies are covered by taxpayers through the Overseas Private Investment Corporation, the US military further minimizes corporate risk by ensuring that regimes friendly to US interests gain power and hold onto it in oil-rich parts of the world. Importantly, this also ensures the continuous flow of oil. Protecting this source of energy does not come cheap. According to Edwin S. Rothschild, Energy Policy Director of Citizen Action,

> "the national security cost of oil is in the area of $57 billion per year; or approximately $9.19 per barrel of oil used in the U.S."[151]

Externalized costs sometimes run even higher. Despite all the rhetoric about democracy, the Gulf War was fought to ensure that the Kuwaiti and Saudi Arabian oil fields continued to supply the industrialised world with the energy it requires. The direct costs for 'Desert Storm' alone were over $60 billion, spread out among all the governments that participated.[152] This does not include the cost to Iraq, nor does it put any value on the lives lost or the damage done to Persian Gulf ecosystems. None of these military costs are internalized in the price of petroleum.

Subsidies for other energy sources

The US government provides energy subsidies for more than just the oil industry: since the goal has been to promote the growth of industry in general, subsidies are provided for all of the large-scale, centralized energy forms the industrial system requires. As early as World War I, for example, the government was building dams to supply electric power to the munitions industry, and later to provide reliable power to the Pacific Northwest's aluminum and aircraft industries.[153] Today, government agencies or cooperatives provide roughly one-fourth of all the electricity sold in the US. These producers benefit from indirect subsidies totalling $2.2 billion annually.[154]

Major US electric utilities are poised to receive another major windfall from taxpayers. As deregulation of the industry proceeds, it seems likely that so-called 'stranded costs' will be passed on to taxpayers and consumers. In large measure these costs are the result of bad investments -- usually nuclear power plants that are uncompetitive with other sources of electricity. Instead of writing off these losses, there are legislative moves afoot to pass the bill on to taxpayers. Moody's Investor Services places the value of the bailout at from $50 billion to $300 billion, while consumer and environmental activists say it could reach $500 billion.[155]

Another way the federal government subsidizes a centralized energy infrastructure is by making sure that public lands are available for energy extraction. Approximately 750,000 acres of coal-bearing public lands -- containing over 1.5 billion tons of coal -- are currently leased to mining interests. Oil companies have acquired leases to explore for oil on some 58,000 federally-owned sites, including 5,000 offshore sites on the continental shelf, and the Clinton administration has recently authorised oil drilling in a previously sacrosanct wilderness area in Alasaka. In total, over 125 million barrels of oil and 1.7 trillion cubic feet of gas were extracted from federal lands in 1993 alone.[156]

The coal industry has been the recipient of many generous subsidies. The government sponsors research into technologies needed by the industry -- including the Department of Energy's $2.5 billion Clean Coal Technology programme. Government agencies ranging from the National Science Foundation to the Department of Defense also sponsored research on behalf of

the coal industry -- totaling $138 million in 1989. Mitigating the damage done by surface mining costs the public an additional $800 million a year.[157]

To these subsidies must be added the externalized costs of coal extraction and burning. Until 1977, no environmental reclamation on mines was required, and strip-mining operations in particular left behind scarred landscapes and polluted rivers and streams.[158] Coal-fired power plants release heavy metals that pollute land and water many hundreds of miles downwind. They are prime culprits in the acid rain problem, and they add significant amounts of greenhouse gases to the atmosphere. The pollutants they discharge also do significant damage to cropland and to public health. None of these costs are internalized in the price of coal: if they were, the price of coal might be as much as fifty times what it is today. A British researcher in 1992 found that the environmental costs of a KWh produced from coal -- selling for around twenty cents -- could be as high as ten US dollars.[159]

Supporting the nuclear industry

Of all the industrial energy sources, none are so directly the product of government support as nuclear power. Born of the Manhattan Project's atomic bomb research during World War II, nuclear power remained in military hands until the 1950s, when the US Atomic Energy Commission (AEC) began major efforts to promote the technology's commercial applications. This quickly became a high priority of US energy policy, representing "the Federal Government's largest and most significant energy project from the 1950s into the early 1970s."[160]

Since the AEC did not believe that private industry would make the necessary investment in nuclear power research, government funds were used to commission the first full-scale nuclear reactor. Afterwards, in order to "further spur private industry's participation in nuclear power development", the AEC initiated a programme whereby the government provided funding and other assistance, but industry would design, construct, and own the reactors.[161] US government aid to the nuclear industry has continued unabated, with almost $1 billion budgeted for nuclear power development R&D in 1992[162], and with additional expenditures hidden in military budgets every year.

The US government is not alone in sponsoring nuclear research. Michael Renner of the Worldwatch Institute notes that

> "Since 1974, OECD governments have invested a cumulative $247 billion in energy R&D. The bulk of these funds went to nuclear programmes -- conventional reactors, breeders, and nuclear fusion."[163]

Subsidies for nuclear power are not always direct. Since the potential costs of a major nuclear accident are so high, it would be extraordinarily expensive to fully insure a nuclear utility's potentially liabilities. In the US, the 1959 Price-Anderson Act capped the responsibilities of nuclear utilities, thereby significantly reducing their insurance premiums. Although the $560 million liability limit for damages due to one accident was raised in 1988 to $7 billion, that amount is still only a small fraction of the potential costs of a major nuclear accident: the near-meltdown of the Chernobyl reactor, for example, cost an estimated $358 billion (as well as 125,000 lives).[164] If nuclear utilities were forced to cover potential losses by purchasing liability insurance -- instead

of passing the bulk of cleanup bills to taxpayers -- it would add an estimated $3 billion a year to the cost of nuclear power.[165]

The federal government has also taken on the responsibility for ensuring that radioactive wastes will be 'safely' disposed of, although no real solution has ever been devised. It is indeed amazing that some 460 grid-connected nuclear reactors have been built around the world, yet there is no viable method to dispose of the many radioactive wastes they generate. Undeterred, governments have commissioned an additional 37 nuclear plants.[166]

Government support worldwide for nuclear power stands in sharp contrast to the tiny subsidies given to renewable energy. This is not surprising: nuclear power is an energy source that meets the needs of a large-scale industrial economy, while decentralised renewable energies -- like rooftop solar water heaters -- inherently run against the grain of the centralized industrial model. An exception that proves the rule is US funding for a huge high-tech solar energy project in the American southwest, in which hundreds of computerized and motorized mirrors track the sun to focus light on a boiler for producing electricity. Hooked into the national grid, the electricity can then by used to power a computer chip manufacturer, an aluminum smelter, or the neon lights of Las Vegas.

Energy for development

If Southern countries are to develop along industrial lines, they too will have to invest heavily in their energy infrastructures. Although oil refineries and natural gas pipelines are part of the mix, electric power plants are the prime

focus: they enable industries to expand and individual consumption to rise, and support the vast cities that development is creating. Thus, according to a World Bank analyst,

> "it's hard to imagine economic growth in much of the developing world without the use and availability of far more electricity than those countries now have".[167]

Building the infrastructure to provide that electricity will cost an estimated one trillion dollars[168]; even paying for a small portion of that sum will require the South to deliver even more of its resources to the North. Yet government leaders in the South are busily preparing World Bank loan documents for their splurges in energy projects. For example:

- China plans to add the equivalent of a medium-sized power plant to its electric generating capacity every week for the next several years. Since coal is one of China's most abundant industrial energy sources, plans include dozens of large coal-fired power plants and a 500-mile-long coal slurry pipeline.[169] Construction also began on two nuclear power plants in 1996; plans call for four more in 1997.[170]

- India's government intends to spend $170 billion to triple the country's electric power infrastructure. The largest single project is the Dhabol Power Project, a $2.8 billion gas-fired facility, using natural gas piped in from Qatar.[171]

- South Korea is currently the world leader in nuclear power construction, with 9 now being built -- adding to the 11 already operating. Despite this commitment to the nuclear energy path, the government has yet to find a suitable location for a radioactive waste facility.[172]

- Brazil is undertaking a massive programme of hydroelectric dam-building, including 18 planned for the Amazon basin between 1990 and 2010, and 62 more in the 21st century.[173]

- Vietnam, which currently gets most of its energy from hydro power, is building a gas-fired power plant in partnership with two American corporations, and has also expressed interest in nuclear power.[174]

- By the end of the century, Latin America will be installing 41,000 MW of capacity, mostly concentrated in Argentina, Brazil, Chile, Colombia, Mexico and Venezuela.[175] And in Africa, the US Trade and Development Agency cites the potential for $126 billion in energy projects.[176]

Such projects are disturbing in part because of the devastation they cause in the lives and livelihoods of nearby villagers, many of whom will be permanently displaced to become industrial refugees in their own countries. Among China's energy projects, for example, is the Three Gorges Dam, the world's largest, which will flood nearly 100,000 hectares of China's best farmland, dislocate over a million people from their homes, and threaten the rural livelihoods of 75 million more.[177]

The negative impact will be felt not only by villagers who are relocated to make way for huge energy projects. Since it is far easier to provide electricity to centralized, urban populations than to dispersed rural villages, most projects serve large cities -- which makes them still more attractive as the locus of 'modern' life. For example, a huge energy project in Nepal costing more than the country's entire annual budget will only provide electricity for Kathmandu, Nepal's largest city. In this sense, rural villagers are being both pushed into the cities by development processes that dispossess them of their livelihoods, and pulled into the cities by the psychological draw of urban life, full of the technological excitement for which electric power is a prerequisite.

These huge projects also do irreparable damage to surrounding ecosystems. Despite their own relatively short life expectancies, large-scale dams permanently damage riverine ecosystems; some are so large they may be responsible for earthquakes and even for shifting the earth's axis. Nuclear power plants create radioactive waste that will be hazardous for thousands of years; the 'accidents' to which these plants are prone regularly release radioactive particles into ecosystems worldwide.

But the environmental and social impacts are even more far-reaching because these energy projects are among the first steps in a development process that has as its goal the replication of Northern lifestyles around the world. That process is already leading to family and community breakdown, increases in crime, violence, competition, and ethnic conflict. What's more, the rising levels of consumption that are the measure of development success are closely linked to increased fossil fuel consumption, and hence to global warming.

Some analysts argue that 'techno-fixes' will increase energy efficiency so much that economic growth can be sustained while energy consumption slows.[178] But even at current global levels, energy consumption places an unsustainable burden on the biosphere. Even if the North's energy efficiency were to increase substantially, it is likely that any gains made will be negated by simultaneous efforts to industrialise the more populous South, where per capita emissions of CO_2 are still only one-tenth what they are in the most industrialised countries.[179]

The promoters of development claim that their long-term goal is to raise Third World living standards to near those of the North. If this is to be accomplished while reducing greenhouse emissions to levels that stabilize global climate, then the efficiency savings would need to be immense: the US, for example, would need to cut fossil fuel consumption by 93.5 percent, Britain by 87 percent, and the Netherlands by 90.5 percent.[180] Techno-fixes alone, it seems obvious, will fall far short of these targets. The reality is that techno-fixes merely allow policymakers to apply an industrial solution to a problem whose source is the industrial system itself. By its nature, that system requries vast amounts of energy, and is so centralizing that the use of diverse, locally-available renewable energy forms is largely precluded.

Shifting direction

It is difficult to imagine the current crop of government leaders suddenly shifting support away from centralized energy supplies to embrace instead the full potential of decentralised renewable energies. Such a change in course would first require a shift in the vision those policymakers have of the future.

In The Whale and the Reactor, Langdon Winner described the social and political structures inherent in the various energy options under consideration:

> "Would it be nuclear power administered by a benign priesthood of scientists? Would it be coal and oil brought to you by large, multinational corporations? Would it be synthetic fuels subsidized and administered by the state? Or would it be the soft energy path brought to you by you and your neighbors?"[181]

Only if there were intense pressure from below would leaders be convinced to pursue the latter path. But as with all policy choices, lasting solutions are not possible unless problems are traced to their root causes. Following a 'soft energy path' towards diverse, decentralised renewable energy sources is not an option if every other policy choice tends towards centralisation, larger scale, and high technology.

In the South today, where the energy infrastructure is still largely undeveloped, there are tremendous possibilities for promoting and adopting renewable energy strategies. But such strategies will be most successful if they go hand-in-hand with efforts to shift away from industrial 'development', and to seek a greater degree of self-reliance rather than greater global economic dependency.

Chapter 7: Education

"Our schools are, in a sense, factories in which the raw materials are to be shaped and fashioned into products to meet the various demands of life. The specifications for manufacturing come from the demands of the twentieth

century civilisation, and it is the business of the school to build its pupils to the specifications laid down."

E.P. Cubberly, 1934[182]

"There can be no doubt that the fantastic wealth of American big business is a direct result of schools training a social mass to be needy, frightened, envious, bored, talentless, incomplete. A successful mass production economy must have such an audience.... Just as the Amish small business/small farm economy requires intelligence, competence, thoughtfulness, and compassion, ours needs a well-managed mass. Leveled, spiritless, familyless, friendless, communityless, godless, and conforming people are best -- people who can believe that the difference between Coke and Pepsi is a subject worth fighting about."

John Taylor Gatto, 1998[183]

While the public generally accepts expenditures on infrastructure as a necessary price of progress, it often loudly applauds investments in education. Literacy statistics, high school graduation rates, and per capita spending on schooling are often used as yardsticks of national enlightenment. Education is considered so crucial to societal well-being that most countries make the formal schooling of their children compulsory. Given the importance modern societies attach to education, it's reasonable to ask what its function is.

First of all, the modern educational system is a homogeniser, with the goal of ensuring that children are all molded into roughly the same shape before leaving school. In a sense this is not so different from the role education has always played in self-sustaining cultures. Anthropologist Margaret Mead described education as "the cultural process... in which each new born individual is transformed into a full member of a specific human society"[184] -- a definition that could be applied equally well to hunter-gatherers and to modern urbanites. But Mead's reference to specific human societies is crucial: each society is unique in its environment, local resources, and cultural history, and so an appropriate education will naturally differ from place to place.

But today a single societal model is forcing itself into every corner of the planet; in the process, it is homogenising cultures and erasing the adaptations that connect people to their local circumstances. In the monocultural global economy, there is little room for educational diversity; instead a one-size-fits-all curriculum is uniformly applied. This homogenisation of knowledge makes schools into "institutions which more and more resemble one another, like airports and motels", in the words of Wendell Berry.[185]

This is particularly destructive in the Third World, where modern schooling systematically erases centuries of accumulated location-specific knowledge. Helena Norberg-Hodge has described traditional education in Ladakh, where children learned from parents and grandparents how to thrive in their particular environment:

> "Helping with the sowing, for instance, they would learn that on one side of the village it was a little warmer, on the other side a little colder. From

> their own experience children would come to distinguish between different strains of barley and the specific growing conditions each strain preferred. They learned to recognis e even the tiniest wild plant and how to use it, and how to pick out a particular animal on a faraway mountain slope.... Education was location-specific and nurtured an intimate relationship with the living world. It gave children an intuitive awareness that allowed them, as they grew older, to use resources in an effective and sustainable way."[186]

Modernisation, on the other hand, brought with it a very different form of education:

> "...modern schooling acts almost as a blindfold, preventing children from seeing the context in which they live. They leave school unable to use their own resources, unable to function in their own world.... School is a place to forget traditional skills and, worse, to look down on them.... The basic curriculum is a poor imitation of that taught in other parts of India, which is itself an imitation of British education. There is almost nothing Ladakhi about it."[187]

When imposed on largely self-reliant communities and their economies, modern schooling severs a link in the chain by which knowledge was passed from generation to generation, knowledge that enabled people to sustain themselves from local resources.

The single, global standard to which modern education aspires is, however, well-suited to the needs of corporations, which use similar methods to produce

goods that are meant to be purchased by similar consumers everywhere in the world. Thus, formal schooling in Indonesia teaches students little about indigenous knowledge and the sustainable use of local resources, but it does prepare them well enough to assemble sneakers in a Nike factory, to respond to advertising messages that influence their spending habits, and to count it all as 'progress'.

It is not only in the South that formal schooling separates children from their local context. John Taylor Gatto, who spent 26 years as an award-winning teacher in New York City's public school system, has described what his seventh-grade students know:

> "My kids don't know what a mile is, not really, although I think they could pass a test on it; in similar fashion they don't know what democracy is, or what money is, or what an economy is, or how to fix anything. They've heard of Mogadishu and Saddam Hussein but they couldn't tell you the name of the tree outside their window if their life depended on it.... Some of them can do quadratic equations, but they can't sew a button on a shirt or fry and egg; they can bubble in answers with a number two pencil but they can't build a wall."[188]

Learning the industrial worldview

Homogenising children worldwide also means imbuing them all with the worldview of industrialism. Among other things, that worldview is highly scientific and reductionist, and values empirical 'facts' above all other forms of knowledge. As David Orr notes,

> "the architects of the modern worldview, notably Galileo and Descartes, assumed that those things that could be weighed, measured, and counted were more true than those that could not be quantified. If it could not be counted, in other words, it did not count."[189]

This emphasis on the scientifically measurable reduces nature to clusters of matter randomly interacting in obedience to the laws of physics; deprived of intrinsic value, nature's worth is determined only by what it provides for human use. This is the Enlightenment attitude articulated nearly 400 years ago by Francis Bacon, father of the scientific method, whose goal was "to establish the power and dominion of the human race itself over the universe".[190] Bacon's ideological descendents in the scientific/educational establishment continue to pursue that goal today -- in part through oxymoronic disciplines like "Wildlife Management", through reputable scientific papers devoted to "Managing Planet Earth",[191] and through concerted efforts to alter, for human ends, the genome of the living world.

An education consistent with the modern worldview is compartmentalised into disciplines that are separate and seemingly independent. Through the fragmented lens of specialised knowledge, problems appear as isolated symptoms; root causes, meanwhile, are obscured -- especially when revealing them would challenge the assumptions underpinning the industrial model. "In this way", Edward Goldsmith argues,

> "the world-view of modernism prevents us from understanding our relationship with the world we live in and adapting to it.... Instead

> modernism, and the paradigms of science and economics in particular, serve to rationalise economic development or 'progress' -- the very behaviour that is leading to the destruction of the natural world....[192]

In a similar way, a narrow, fragmented perspective allows individuals to avoid confronting the consequences of their own actions. Even well-intentioned people -- many of them with an earnest concern for humanity and the environment -- nonetheless work for corporations or institutions involved in the rawest forms of human and environmental exploitation. A Union Carbide employee that looks no further than the increased 'productivity' pesticides provide can be blind to the impacts on human health, the environment, and the livelihoods of small farmers. A World Bank employee focused closely on per capita income or the availability of electricity can neglect the breakdown of cultures, communities, and ecosystems that Bank policies cause. Scientific specialists can devote their working lives to technologies ranging from atomic weaponry to cloned sheep, while the consequences are neatly compartmentalised into subject headings marked 'national defense' or 'scientific curiosity'. For such people, many years of specialised training has narrowed their focus so tightly that the broader effects of their work are obscured.

Promoting technophilia

The educational system also reinforces the notion that viable societies must be based upon the industrial model. If 'alternatives' are considered they too must be variants of industrialism -- such as socialism, communism, or even the 'Global Village' with its on-line virtual communities. Despite its fundamental

flaws, the 'normalcy' of the industrial model is rarely questioned by the educational establishment, as Edward Goldsmith makes clear:

> "... the modern discipline of economics is based on the assumption that the destructive economic system that is operative today is normal; the discipline of sociology on the assumption that our modern atomised and crime-ridden society is normal; our political science on the assumption that the elected dictatorships that govern modern nation states are normal; and our agricultural science on the assumption that large-scale, mechanised, chemical-based agriculture (which rapidly transforms arable land into desert) is normal. It simply does not occur to many academics that what they take to be normal is very atypical in the light of humanity's total experience on this planet..."[193]

Since its baseline is firmly drawn in the industrial era, modern education focuses far more on the workings of the technosphere than the biosphere. The implicit message is that life itself ultimately depends on technology and human-made institutions, not on the natural world. This delinking is a frequent feature of learned treatises on modern problems. A Yale University economist thus dismissed the impact of the greenhouse effect on the US, since "climate has little economic impact upon advanced industrial societies":

> "Cities are increasingly becoming climate proofed by technological changes like air-conditioning and shopping malls.... Studies of the impact of global warming on the United States and other developed regions find that the most vulnerable areas are those dependent on unmanaged eco-systems -- on naturally occurring rainfall, run-off and

> temperatures, and the extremes of these variables .... Most economic activity in industrialised countries, however, depends very little on the climate. Intensive care units of hospitals, underground mining, science laboratories, communications, heavy manufacturing and microelectronics are among the sectors likely to be unaffected by climatic change. In selecting whether to set up in, say, Warsaw or Hongkong, few businesses will consider temperature a weighty factor."[194]

In this view, the world inhabited by industrialised peoples is so divorced from nature that major disruptions to the biosphere would scarcely be noticed. Disruptions to the technosphere, on the other hand, would be catastrophic: "There is no life today without [computer] software", an executive of a major US-based corporation claimed. Without computers, "the world would probably just collapse".[195]

As David Orr has observed about modern schooling, faith in technology "is built into nearly every part of the curriculum as a kind of blind acceptance of the notion of progress"[196]. But corporations also use the educational infrastructure to gain acceptance for the specific technologies they control. This is particularly true in America, where corporations provide cash-starved schools with free study materials and teacher's kits laden with corporate-friendly messages. Monsanto, the corporation responsible for biotechnologies ranging from Roundup-ready soybeans to genetically-engineered bovine growth hormone, recently conferred an 'environmental' award on company employees who devised a "student education project ... that worked to raise student awareness about environmental benefits from biotechnology."[197] Along with seed corporation Pioneer Hi-Bred International, Monsanto also underwrote

Field of Genes, a classroom curriculum for teachers that gives an industry spin on genetics, biotechnology, and genetic engineering.[198] Similarly, the timber-industry giant Weyerhauser created a teacher's guide that suggests students discuss the "innovative practices" Weyerhauser has introduced to forest management.[199]

Training for a roles in a corporate economy

A further function of the modern educational system is to prepare children and young adults for jobs in a corporate-dominated global economy. Even corporations readily admit that they depend on the educational infrastructure to churn out their labour force. Eminent European chemists recently issued a report concluding that Europe's chemical industry would relocate to another part of the world unless research received more government support. One of the report's authors noted that "industry is reliant on universities for its workforce, so we must ensure that academic institutions are properly funded" (emphasis added).[200]

Having grown wealthier than many governments, corporations are increasingly willing to pay for the right to tailor the educational infrastructure to their specific needs. Corporations endow university chairs, pay for the construction of buildings and research facilities, and fund whole departments in fields useful to their commercial enterprises. England's Loughborough University, for example, is now offering a Bachelor of Science degree in "Retail Automotive Management" -- the country's first university-level degree in car-selling. Funding for the programme is being provided in part by the Ford Motor Company.[201]

Since corporations need a steady supply of MBAs, business schools have little trouble attracting corporate support. In Leasing the Ivory Tower, Lawrence Soley describes how the funding sources for a new building at Michigan State's business school are documented in the names of various building components:

> "The second floor of the building is named after the Kresge Foundation, a 350-seat lecture hall is named for the Ford Motor Company, the fourth floor is named for a Toyota dealer, the fifth floor is named for the Chrysler Corporation, and the MBA lounge is named for the First of Michigan Corp."[202]

Corporate labels go on more than just building parts. Thanks to Bank of America's $2 million donation to the University of California at Berkeley, the new dean of the University's business school, Laura d'Andrea Tyson, is officially the 'BankAmerica Dean'.[203]

Though their influence is not always this visible, corporations are quite clear about what they expect from the educational system. In Britain a Graduate Employability Test, which "objectively measures and profiles the skills most often specified by employers", focuses on just three areas: "business awareness", "personal working style", and "computer skills".[204] There is nothing location-specific about these skills, nor is there anything remotely connected with critical thinking, civic responsibility, or moral understanding.

Today's well-trained worker can be ignorant about the local ecosystem, but their computer training must be up to snuff. According to Bill Gates, failure to

be computer-adept means "you risk being ineffective in almost any kind of work you pursue".[205] US government leaders apparently agree, since they are spending billions of dollars in public funds to equip schools with computers and to wire them for Internet access, with the goal of providing online access for every 12-year old. As Bill Clinton explained, "This can make all the difference for communities struggling to make sure their students are ready for the 21st century."[206]

Thanks to thinking like that, children in the industrialised world are seated in front of computer terminals earlier and earlier in life. In Britain, parents can send their children to Whizzkids, which teaches computer literacy to children under the age of five. An organiser of these early-learning centres boasts that they are teaching ten-finger touch-typing to children as young as three.[207] This is relatively late in life compared to American children, whose parents made a big seller out of "Jumpstart Baby", software 'suitable' for children as young as nine months old.[208] Manipulated by media hype and their own work-place fears, parents are thus helping to mold their children to corporate specifications even before they enter the formal educational system.

Of course not every child will graduate to a well-paid job tapping away at a computer keyboard or managing a business empire. But corporations also need low-paid service employees, and modern educational systems are churning out these workers as well. In Australia, in fact, the McDonald's Corporation has entered into discussions with the Minister for Education regarding "accreditation" for the training workers receive in the restaurant. Under the plan, students working at McDonald's would be given course credit for flipping

burgers and dishing out fries -- excellent preparation for the only kinds of jobs many will find in the new global economy.[209]

Selling the minds of children

The corporate economy not only needs to ensure that the slots on organisational charts are filled, it also needs consumers for the dizzying array of products it churns out. An expanding role for modern schooling today is thus to familiarise children with the consumer world they will inhabit the rest of their lives. Nowhere is this more true than in America, where school-age children combine their own spending with the influence they wield over parental buying habits into a $485 billion market.[210] In order to create and tap this market, corporations are insinuating themselves deeper into the educational system, where they have a captive audience for any commercial messages they can introduce. In many schools corporate advertising now adorns school hallways, cafeterias, school buses, and computer screens.

Perhaps the most insidious example of this trend is Channel One, a commercial-laden television 'news' programme that nearly 40 percent of American secondary schools compel students to watch. Whittle Communications, the for-profit corporation that dreamed up this scheme, provides schools with video equipment and a satellite dish permanently tuned to Channel One in exchange for a contract guaranteeing that students will spend twelve minutes each day watching the network's programming -- including two minutes of commercials. In the course of a year, students spend the equivalent of one whole day watching advertising. One study found that a

majority of students thought the advertised products must be good for them, since they were shown in school.[211]

The negative impact of commercial television in the classroom goes well beyond the advertising messages themselves: children are also taught that television is a reliable source of information and a viable educational medium. Any parent wanting to eliminate television from their children's lives has to contend not only with peer pressure, but with the educational establishment's implicit endorsement as well.

Implanting ideology

Corporations today 'generously' offer teachers free study guides, magazines, posters, and other products for classroom use. As educational materials their value may be dubious, but as vehicles for corporate messages they are quite effective. Kellogg's produces 'nutrition' posters that feature the company's cereals; the Hershey Food Corporation distributes a video on geography, nutrition and science prominently featuring Hershey's chocolate; Nike hands out free book covers plastered with its logo. Today, virtually every Fortune 500 company has a school project of a similar nature.[212]

Several companies have found a lucrative niche creating these classroom materials. Often the goal is simply to familiarise impressionable children with commercial products -- as when third graders learn to solve arithmetic problems by counting Tootsie Rolls, or learn to read using the corporate logos of Kmart, Coke, Pepsi, or Cap'n Crunch.[213]

Other times, more sophisticated ideas are implanted. Procter and Gamble's teaching aid about labour issues, 'Coping with Growth', essentially encourages children to accept corporate rule as a benevolent part of the social order. Thus a role-playing game within the curriculum asks students to see events from the point of view of corporate management during a series of strikes against the company in 1886:

> "Whenever the employees start a walkout you feel there ought to be some way of kindling among the workers a stronger feeling of respect for and loyalty to [the company].... How can they be convinced that their overall interests are truly inseparable from those of Procter and Gamble?"[214]

According to Michael Jacobson and Laurie Ann Mazur, authors of Marketing Madness, similar materials have been created for industry public relations arms ranging from the American Nuclear Society to the National Frozen Pizza Institute. They also point out that the companies producing these materials are clear about their purpose when soliticing business:

> "'Let Lifetime Learning Systems bring your message to the classroom, where young people are forming attitudes that will last a lifetime,' purrs the company's sales kit. 'Whatever your objective, we can help you meet it.... Coming from school... all these materials carry an extra measure of credibility that gives your message added weight'. Another ad asks potential clients to 'IMAGINE millions of students discussing your product in class. IMAGINE their teachers presenting your organisation's point of view.'" .[215]

Not even pre-schoolers are safe from this corporate assault. Lifetime Learning Systems notes that by age four children are making "brand decisions", and -- in an unintentionally profound statement -- points out that "Preschool prepares children to become consumers".[216]

In sum, modern education serves to turn children into adults who are passive consumers and workers. John Taylor Gatto lists some of the learning required of Americans:

> "The American economy depends on school teaching us that status is purchased and that others run our lives; we learn there that the sources of joy and accomplishment are external, that contentment comes with possessions, seldom from within. School cuts our ability to concentrate to a few minutes duration, creating a life-long craving for relief from boredom through outside stimulation. In conjunction with television and computer games which employ the same teaching methodology, these lessons are permanently inscribed."[217]

Educating children for roles in the corporate economy, indoctrinating them with an industrial worldview and an uncritical faith in technology, subjecting them to corporate manipulation in the classroom -- all these are considered reasonable functions of the educational system. But even the fairly mild environmental programmes underway in many schools have come under attack from an industry-led backlash. Turning reality on its head, critics claim that

> "unlike most schooling from kindergarten through 12th grade, environmental education often expressly encourages students to change their own behaviour and that of their society."[218]

Re-localising education

It is a commonplace observation that the average child in the industrialised world can recognise hundreds of corporate logos, but not more than a few local plant species. Though this state of affairs cannot be blamed entirely on formal education, it nonetheless reveals how children are systematically disconnected from the places where they live, and measures how successfully the architects of the corporate economy have done their job.

Educational systems can still be redirected to serve the needs of communities rather than corporations, and to enable individuals to participate in diversified local economies rather than becoming specialised, blinkered cogs in a global economy. What this would require is more educational diversity -- systems of schooling that reflect local circumstances and teach ways of using nearby resources to meet local needs. This does not imply that the flow of information from other cultures should be shut off; in fact an emphasis on local adaptation would give students a positive framework for understanding and respecting cultural differences.

Some shifts in the educational system could be fairly straightforward. Direct experience of nature could replace much of the learning that now comes from books, videos, and computers. Some of this knowledge might be imparted better by parents and neighbours with an intimate knowledge of the local

ecosystem than by formally-trained teachers. Food for school lunches could be provided by local farmers -- and students could even grow some of their own -- thereby providing a vital link to local resources and the local economy. This would be a radical departure from current practice in places like the United States, where Taco Bell has outlets in more than 3,000 schools, and Pizza Hut delivers to 4,000.[219]

Rather than segregate children into factory-like same-age classrooms that inherently foment competitiveness, a return to mixed-age classrooms -- similar to the neighborhood one-room school houses still found in some rural areas -- would be a great improvement. Experience has shown that when children are in a position to help younger students and learn from older ones, cooperation rather than competition becomes the norm.

Erasing the many regulatory obstacles to homeschooling would also be beneficial, particularly where parents are involved in agriculture, forestry, and other means of local production -- using skills that cannot be taught in classrooms or learned from books. Apprenticeships in those fields or in local artisanry should also be accorded their due as real and valuable forms of education. Such a shift would not only return children to their traditional place as important members of the local economy, but would also impart a sense of responsibility to children at an early age.

On a deeper level, a questioning of the industrial worldview that modern education now implants in children is in order. As David Orr points out, the products of an educational system based on that worldview are a cosmic embarrassment:

> "Overflowing landfills, befouled skies, eroded soils, polluted rivers, acidic rain, and radioactive wastes suggest ample attainments for admission into some intergalactic school for learning-disabled species."[220]

Instilling instead a worldview that emphasises humanity's connection with all life would be far healthier for both people and the planet:

> "That affinity needs opportunities to grow.... Education that builds on our affinity for life would lead to a kind of awakening of possibilities and potentials that lie largely dormant in the industrial-utilitarian mind."[221]

Among those potentials is a future in which people are free to create and nurture systems of knowledge as diverse as the places they inhabit.

But since education serves the function of perpetuating a particular form of society, it would be naive to think that fundamental changes in education will occur without an equally deep reordering of overall societal priorities. John Taylor Gatto, referring to American schooling in particular, argues that modern education does not allow children to grow into fully responsible, self-reliant adults, nor does it allow for their diversity:

> "As our economy is rationalised into automaticity and globalisation, it becomes more and more a set of interlocking subsystems coordinated centrally by mathematical formulae which cannot accomodate different

> ways of thinking and knowing. Our profitable system demands radically incomplete customers and workers to make it go.[222]

"To rehumanize schooling", he adds, "we would need to re-humanize the economy and abandon our dreams of empire."[223]

Chapter 8: The Research Infrastructure

"...the White House has approved a proposal to spend up to $1 billion to help US companies compete with Japan in making sophisticated computer display screens.... The plan builds on current research programmes paid for by the Pentagon and the Energy Department, for which Congress already has authorised $100 million."

San Francisco Chronicle[224]

Industrial growth depends in part upon a steady stream of technological innovations. These advances improve the productivity of corporations, provide them with better access to geographically dispersed markets and resources, and expand the range of products they sell.

Corporations rely heavily on publically funded research for these innovations. In the United States alone, government expenditures on research total some $65 billion a year. A recent study on the origins of technological innovation demonstrated that such research is a "fundamental pillar of industrial advance". The study showed that for the most part corporations do not rely on themselves for the research that fuels their growth: nearly three-quarters of

American industrial patents in recent years were based on research financed by the public -- either directly, by governments, or indirectly, through non-profit agencies.[225]

The governments of industrialised countries are the biggest sources of funds for research and development. Among them, the US, Japan, Germany, France, Britain, Italy, and Canada provided more than $170 billion for research annually in the early 1990s.[226] More than a third of that total went towards military spending, with spinoffs that eventually reach industry in general. Little of this spending generates anything of fundamental use to small-scale producers or locally-based economies, but instead adds to the technological treadmill that undermines rural life.

In agriculture and health, much of the research funding is being poured into biotechnology. The $3 billion the US government will be spending on the human genome project has garnered the most publicity, but numerous other biotech projects are also being funded. The US Department of Energy, the National Institutes of Health, and the National Science Foundation have teamed up to provide $100 million for researching the genome of a small mustard-like plant that has emerged as a key model for genetic engineering. This research will ultimately benefit pharmaceutical and agricultural biotech firms.[227] Similarly, the UK's Department of Trade and Industry (DTI) provided businesses with £7.5 million in biotechnology R&D grants in 1994 alone. This research went hand-in-hand with DTI's Biotechnology Means Business programme, which "promotes the use of modern biotechnology by companies which have not previously used it within their operations."[228]

Germany also earmarks considerable amounts of public funds for high-tech research. The German Aerospace Research Establishment (DLR), for example, employs more than 4,000 people in seven research centers, working on aviation, space flight, and energy technologies. According to information provided by the organisation, "results from this research and development work ... plays a significant role towards securing the industrial and technological position of Germany".[229] Such public investments in research pay off handsomely for corporations, which can improve their efficiency and obtain marketable innovations at little or no cost.

University research

Though geared towards the needs of corporations, much of the research conducted today occurs on university campuses. The universities themselves are willing participants in this system, since the flow of grant money from governments increasingly depends on performing research that corporations want. Universities can even make out at both ends by receiving payments for the fruits of research conducted at public expense.

Lawrence Soley describes how this works at the Massachusetts Institute of Technology. For a small fee, some 300 corporations are provided with MIT research reports, invited to symposia and seminars, and given personal access to MIT's faculty. As the catalog for the university's Industrial Liaison Program unabashedly points out, MIT places "at the disposal of industry the expertise and resources of all the schools, departments and laboratories of MIT." The $10,000 to $50,000 per year corporations pay is a pittance, considering that

they are being given access to the half-billion dollars in research done at MIT annually -- almost all of which is funded by the US government.[230]

Similarly, the University of Wisconsin at Milwaukee licenses research findings to corporations and works directly with them on product development. The aim of its Office of Industrial Research and Technology Transfer is to help "business and industry... convert research results obtained in the university into commercial products, processes and services."[231] As at MIT, most of those research results are the product of public funding.

Sometimes corporations pay substantially more than bargain basement rates for the research they require. But Monsanto's $62 million arrangement with Washington University, Hoescht's $70 million deal with Harvard, and Ciba-Geigy's $20 million payoff to the University of California at San Diego effectively turn those institutions into appendages of the corporations that fund them. For their dollars, the companies get exclusive licenses, patent rights, early access to research results, and access to the labs themselves. Despite the relatively large sums involved, the corporations are paying only a fraction of the cost of research; the difference is effectively a public subsidy.[232]

The marriage of corporate industry and publically funded research institutions is now commonplace: a research center planned for Harvard University's Institute of Medicine, for example, will devote almost half its space to corporate offices and research facilities. Harvard will own the patents to any discoveries made at the institute, while the corporations will be allowed to market them. As usual, substantial funding will come from the US government, which

currently provides more than half the $650 million annual budget of Harvard's Medical School and its affiliates.[233]

Even research funded by the former Soviet Union is now being exploited by corporations: in 1990, Monsanto paid $500,000 to a team of Russian biological scientists at Moscow's Shemyakin Institute in return for the right to market their discoveries in the West.[234]

European universities and corporations are similarly intertwined, but the European Commission is concerned that the relationship is not intimate enough. Thus, Europe's

> "limited capacity to convert scientific breakthroughs and technological achievements into industrial and commercial success [stems from] the still inadequate links between universities and businesses ... and the lack of coordinated strategies between businesses, universities and the public authorities..."

In the future, therefore, Europe will be taking steps to further facilitate "the transfer of technologies from university laboratories to companies...." [235]

The nature of high technology

These trends are troubling not only because they reveal another layer of corporate welfare, but more importantly because of the inherent nature of the technologies that are being created with public funds. For the most part, the research infrastructure is creating technologies suitable only for the needs and

purposes of huge corporations, thus propelling society still further in the direction of the large and global.

Even funding for basic research -- which is thought to simply 'expand the frontiers of knowledge' -- inherently promotes larger scale: as scientific knowledge has grown, so has the scale of technology needed for further expansion. Probing the outer reaches of the solar system or the inner workings of the gene require technological infrastructures far beyond the small laboratories and backyard workshops of earlier scientists and inventors. The scale and the cost involved have already grown so large that only huge enterprises have the ability to conduct basic research or apply the findings.

Applied research is now so expensive in high tech fields that even the largest businesses have difficulty financing it on their own -- which helps explain the many mergers and partnerships among technology firms. When Toshiba entered into an agreement with rival Siemens, a spokesperson for the former said,

> "The objective is to share the costs and the risks... because the development of the next generation of semiconductors requires huge costs -- huge costs -- and it is very difficult for any one company to do it alone."[236]

The expanding scale of technology also requires a parallel expansion in economic scale. Akio Morita, head of the Sony Corporation and a member of the Trilateral Commission, argued that "making the whole of the developed

world essentially one big market" was necessary if industries were to sustain their growth curves:

> "This is particularly true for the increasingly technology-intensive manufacturing sector, which requires global markets to justify its huge investment needs" (emphasis added).[237]

In other words, today's technologies are so expensive they are only viable in the context of a huge, globalised economy.

The main beneficiaries of technologies created by publically-funded research are corporations. If individuals can be said to benefit at all from these innovations, it is only in their role as consumers of an expanding line of corporate products. The technologies themselves remain firmly in the hands of corporations, adding to their power while furthering everyone else's dependence on the corporate world.

Some innovations help provide the infrastructure needed by large-scale economies: more efficient and higher speed transport, faster and more reliable telecommunications networks, new means of extracting energy from the earth. Research in other areas -- pharmaceuticals and biomedical products, agricultural chemicals and machinery, building products, etc. -- is giving corporations tighter control over people's everyday needs.

Some research merely enables corporations to encourage consumers to buy new products -- part of the 'new and improved' treadmill that keeps consumption high by creating new needs. One heralded achievement of Rensselaer

Polytechnic Institute's Center for Product Innovation, for example, was a redesigned coffee pot for the Norelco Corporation.[238] And the US Jet Propulsion Laboratory (JPL) has teamed up in a "strategic alliance" with toymaker Mattell on a "Hot Wheels JPL Sojourner Mars Rover Action Pack Set" -- described in a press release as "one example of how the Jet Propulsion Laboratory Technology Affiliates Program works with industry".[239] Your tax dollars at work.

Undermining small scale

Most new technologies inherently benefit larger scale operators at the expense of smaller ones. Nowhere has this been more true than in agriculture. In his book The Growth Illusion, ecological economist Richard Douthwaite describes how the introduction of diesel and electric irrigation pumps to a small village in India favored the farmers who had the capital to invest in them, while those who remained with traditional methods -- based on oxen -- were irreparably harmed. The new pumps allowed more water to be pumped, and raised the yields of the farmers that used them. But the increased production ultimately led to a drop in crop prices; the water table also fell, adding to the burden on farmers using traditional irrigation methods.[240]

Thus, this one new technology had increased the gap between the richest and poorest in the village, ultimately driving some farmers off the land; it also undermined the long-term sustainability of the agricultural system by depleting ground water supplies; and it siphoned money from the village to industrial pump manufacturers and energy firms. Yet the technology was no doubt introduced to the village by the agents of 'development' as a great step forward.

A similar pattern of events has unfolded in the industrialised world as well, as new technologies centered on machinery and chemical inputs increased labour productivity, but hurt small producers and ultimately decimated rural life. In Vermont, for example, half the dairy farmers in the state were driven out of business when refrigerated bulk tanks replaced the old 40-quart milk cans in the 1950s. The cost of adopting the new technology was too great for farms with less than 30 cows, and 20,000 small family farm member were driven off the land.[241] The mechanical tomato picker had a similar impact in California. The machine reduced the cost of harvesting tomatoes by $5-7 per ton, but the $50,000 price tag meant that only the largest farms could use it profitably. This one technology, developed at public expense by researchers at the University of California, led to a decline in the number of tomato farms from 4,000 in the early 1960s to about 600 in 1973.[242]

Land grant colleges

In the United States, much of the country's agricultural research takes place at land grant colleges, institutions that were created specifically to strengthen and serve small farmers and rural life. Looking at that infrastructure reveals much about the impact of publically-funded research.

The land grant system -- created by a series of legislative acts in the late 19th and early 20th centuries -- consists of agricultural colleges, experiment stations, and extension services. The language of the acts setting up the system leaves little doubt that it was intended to help maintain an agricultural way of life and a rural economy. Reference was made to "a sound and prosperous

agriculture and rural life", and the "development and improvement of the rural home". The system was meant to "assure agriculture a position in research equal to that of industry, which will aid in maintaining an equitable balance between agriculture and other segments of the economy." It would also help disseminate "useful and practical information on subjects relating to agriculture and home economics."[243]

If the land grant colleges had stayed true to these goals, they might have helped small farmers survive. Instead, the system ended up treating agriculture like any other industry, in which the primary goal is to increase production in general and labour productivity in particular. Most of the meaningful research and teaching in the land grant system was eventually devoted to technological innovations -- primarily machinery and chemical inputs -- that improved 'efficiency' so well that the vast majority of farmers were made redundant. In a description that sounds similar to trends in universities today, Jim Hightower and Susan DeMarco point out who this research has really helped:

> "It is the largest-scale growers, the farm machinery and chemicals input companies and the processors who are the primary beneficiaries. Machinery companies such as John Deere, International Harvester, Massey-Ferguson, Allis-Chalmer and J.I. Case almost continually engage in cooperative research efforts at land grant colleges. These corporations contribute money and some of their own research personnel to help land grant scientists develop machinery. In return, they are able to incorporate technological advances in their own products. In some cases they actually receive exclusive licenses to manufacture and sell the products of tax-paid research."[244]

As a result of research conducted at the land grant colleges, millions of farmworkers lost their jobs, hundreds of thousands of small farms went out of business, and the vitality of rural life was decimated.

Local knowledge for local economies

None of this was inevitable, nor is it now. There is no reason why these colleges -- or any other research facility -- must continue turning out a "technological arsenal suited to a large-scale of operation", in the words of Hightower and DeMarco. Wendell Berry, for example, lists some of the roles the land grant colleges could fill that would be helpful for small farmers and their local, rural economies. These include developing small-scale technologies and methods appropriate to the family farm; promoting cooperatives and other means of protecting small farmers from corporate suppliers and purchasers; strengthening local markets for poultry, eggs, butter, cream, milk, and other farm products; and working to overturn the regulations that have destroyed such markets.[245]

Agricultural researchers Jack Kloppenburg and Beth Burrows point out that if the goals are to feed people, to revitalize rural communities and local economies, and to maintain the stability of ecosystems, then public money for agricultural research might be devoted to such small-scale farming techniques as rotational grazing of dairy herds, or gaining a better understanding of the structure of Amish farming. If, however, the primary goal is to meet the growth requirements of corporations, then research funding will go towards such

technologies as genetic engineering, which promises to give corporations an even tighter stranglehold on the world's food supply.[246]

A similar argument can be made for research in other areas of life: rather than pouring billions into nuclear power and fossil fuel research, funding could go towards making diverse and decentralised renewables more readily available; rather than research into high-speed rail and "intelligent transportation systems" that enable cars to drive themselves, money could be spent improving small-scale and locally-appropriate transport modes.

The choices made by governments clearly favor larger scale, and no significant funding has been available for small-scale technologies adapted to local environments. Emblematic of the trend is a university in the US which provided $27 million for a new biotechnology center, while housing its Family Farm Institute and other sustainable agriculture facilities in a tiny, remodeled furnace building.[247] And in Europe, the EEC praises biotechnology as a field offering a "rich source of growth", one which should therefore be supported.[248] About the future of small-scale, truly sustainable farming and rural life in general, they are quite silent.

Chapter 9: The Infrastructure Race

"The modernisation of Europe's infrastructure is ... a precondition for carrying out the whole of Europe's ambitious political, economic, and social agenda."

European Round Table of Industrialists[249]

As the preceding chapters have shown, governments have for many years subsidized large-scale infrastructures that benefit the largest enterprises at the expense of smaller ones.

But the growth imperative is relentless, and even the most modern infrastructures must constantly be improved. When US Transportation Secretary Rodney Slater presented Congress with his agency's five-year, $175 billion budget for ground transportation, he justified this vast sum with a familiar argument:

> "Our economy is rapidly changing and so must our transportation system. The global marketplace is now as close as next door. By improving access to markets worldwide... we will provide the foundation for American businesses to flourish in the 21st Century.
>
> Nations throughout the world are making massive investments in transportation infrastructure, often in an effort to catch up with the United States. The failure to meet these growing challenges could slow our economic growth and reduce our ability to compete effectively."[250]

"Improving access to markets worldwide" will require new infrastructure investments in:

- Rail transport, including $290 million towards high-spead rail service between Washington DC and Boston, and $35 million in research into technologies to "reduce the cost of high-speed rail systems to $2-$3 million per mile".[251]

- Air transport, including $1.35 billion for new airports and improvements to existing ones; $39 million for research in aircraft structures and materials; $80 million for satellite-based global positioning systems; $90 million for improving the air traffic control system; and another $1.8 billion to "modernize the infrastructure of the national airspace system".[252]

- Highways, including $17 billion for the Federal-aid Highway programme, and $100 million to leverage state resources "for projects of national significance, such as interstate and international trade corridors"; $612 million for research into "Intelligent Transportation Systems"; and $630 million for highway demonstration projects.[253]

- Miscellaneous other trade-related projects, including $1.5 billion for "shipyard modernisation projects"; and $40 million in loan guarantees for export ship construction.[254]

The race is on

When Secretary Slater argued that these expenditures were necessary because of the "massive investments" other nations are making, he may well have had the nations of the European Union in mind. As in the US, long-distance transport networks in Europe are already highly developed, thanks to many years of subsidies from national governments. In Britain, for example, the government has paid for virtually every trunk road built since 1919, and has heavily subsidized the construction of canals, waterways and railways.[255] But Europe's corporate planners are aware that globalised markets and expanded trade require still faster and more extensive transport networks, and they have

used their influence to place transportation high on the agendas of the European Commission and individual European governments.

Much of this corporate lobbying has been undertaken by the European Roundtable of Industrialists (ERT), composed of CEOs and other executives from Europe's most powerful corporations -- Volvo, Fiat, Olivetti, Philipps, Bosch, Siemens, ICI, Unilever, Renault, BSN, Nestlé, Ciba-Geigy, and others.[256] At its initial meeting in 1983, this group was described by the Financial Times as a "Who's Who of European industrial heavyweights."[257] The group has since grown, and now includes representatives from 45 of Europe's largest transnational corporations.

The ERT pushed not just for better transport, but for the complete integration of Europe's national economies, on the grounds that separate national markets "prevent many firms from reaching the scale necessary to resist pressure from non-European competitors."[258] Unbelievably, the ERT believes that too much attention is being lavished on local needs:

> "...perhaps the greatest problem lies in changing the mind set of planners who, still today, work in a context dominated by the need to satisfy local and national requirements."[259]

For the ERT, the goal is a single European market of 360 million people, larger than that of either North America or Japan, giving European corporations an edge in global competition. The means to that end includes a greatly expanded transport and communications network, along with the political and monetary

changes needed to eliminate all trade barriers between European nations. The latter steps are already well underway.

The infrastructure additions were described in "Missing Links", in which the ERT called for $60 billion worth of new highway and high-speed rail projects that would complete a European-wide transport network. "Missing Networks" expanded on the earlier document, and refers not only to transport, but to an expanded communications infrastructure -- including digital telecom exchanges and a high-capacity fiber optic network.

The ERT 'recommendations' were accompanied by a warning: if these infrastructure investments were not made, Europe's corporations "might have to reconsider their long-term strategies... with the possibility of redirecting industrial investments to other parts of the world" -- another example of the not-so-subtle blackmail corporations now routinely employ.[260]

Not surprisingly, the ERT's infrastructure recommendations have been largely embraced by the European Commission, which incorporated a masterplan for a Trans-European Network (TEN) into the Maastricht Treaty. This network encompasses much of Europe's existing transport infrastructure, plus some 200 additional projects -- from rail links and motorways to sea crossings, airports, and natural gas pipelines. Priority projects include seven new high-speed rail links in and between France, England, Italy, Austria, Germany, and Spain; motorways in Greece, Bulgaria, Portugal, Spain, Ireland, Great Britain, and all the Scandinavian countries; rail or road crossings over the Oresund Strait separating Denmark and Sweden, across the Irish Sea between Britain and

Ireland, and under the English Channel. This latter project, the 'Chunnel', has already been built.

The TEN also includes investments for a satellite-based network of mobile telecommunications for the European truck fleet, a unified European air traffic control system, and over 40 energy infrastructure projects. The new communications infrastructure in particular "will enable companies to globalise their activities... on a scale never before possible".[261]

The fourteen priority TEN projects are listed on the chart on page ----, and the secondary projects on page ----. An additional 150 or so projects are lower priority, but are still part of the network.

All told, it is a massive undertaking, threatening the status of the US Interstate Highway system as the 'world's largest public works project'. The estimated cost of this network is some $465 to $580 billion over the next 15 years; the fourteen highest priority projects alone are expected to cost some $100 billion. The European Union would provide up to 10% of the cost, as well as feasibility studies, loan guarantees and interest rate subsidies. In some high priority projects, EEC financing might reach 90 percent of the total.[262] The rest is ultimately the responsibility of national governments. Although the European Commission claims that funding for most of the projects can come from the private sector, this seems unlikely. The Channel Tunnel between Britain and France, which was 100% privately financed, has turned into a financial nightmare for investors, who will be leery of funding future projects.[263] To whatever extent these networks are built, they will most likely be built the old-fashioned way: with public funds.

Destroying small scale

If completed, the Trans-European Network will not only help big businesses get bigger, it will promote the growth of big cities as well. Take, for instance, the high-speed rail lines that represent half of the priority projects in the planned network. Unlike many of the train lines that now criss-cross European countries, high-speed trains stop only at the largest cities. The smaller towns and cities that are bypassed become reduced in economic importance, while resources, jobs, and economic power are further centralized in the most urbanized areas.

The same is true of the multi-lane, 'limited access' motorways that are planned. Any town or village not served by an exit from the highway will be bypassed by commerce. New development will tend to cluster near motorway exits (as has already been the case with existing European motorways) threatening the vitality of urban cores even among those cities served by the motorways. Large-scale retailers -- with lower prices that are partially the product of transport subsidies -- will draw customers from ever further away, and dependence on the car will grow. No doubt the consequent increase in traffic will elicit calls for additional roads.

People in the United States are all too familiar with this pattern. Urban planners and environmentalists in America have already witnessed the destructive impact of the car culture, and can only watch in amazement as they see the same pattern imposed on Europe -- promoted by corporate interests similar to those that helped set America on its current sprawling course.

The premise behind government investments in the Tran-European Network is that trade, and consequently long-distance transport, are necessary for economic growth. But that growth will be largely limited to those businesses whose scale is large enough to participate in trans-European trade. Small, local businesses will reap no benefits; in fact, they may not be able to survive the further advantages given to their large-scale competitors. The demise of such small, locally-owned businesses will further impoverish small towns, villages, and rural life. Even the European Commission is aware of this impact: the planned doubling of the motorway system alone is expected to lead to the demise of 1,000 small villages throughout Europe.[264]

Valid concerns about the environment, about the further concentration of power in huge corporations, about the sapping of local economic vitality -- not to mention the erosion of national sovereignty and identity -- might convince people that their best interests are not served by these projects. Corporate planners are well aware of this possibility, and are devoting considerable energy to "obtaining the consensus of citizens". For the ERT, this means sponsoring a center to provide "authoritative views" that support the corporate agenda. As for concerns about the jobs that would be lost to high-technologies, the European Commission finds that "it is difficult to assess this factor precisely", and so it's an issue best ignored:

> "In any event, it would be fruitless to become embroiled in a fresh dispute about the 'machine age', as was the case with the first industrial revolution. Worldwide dissemination of new technologies is inevitable".[265]

Likewise, people's objections on environmental grounds "cannot simply be granted a power of veto", according to the ERT:

> "If Europe is to escape from the effects of the sterile veto, the increasingly effective organisation of those arguing for environmental citizens rights must be matched by a more effective organisation of the advocates of change, adaptation, and growth."[266]

'Change, adaptation and growth': once again the language of evolution is being employed in the service of changes consciously planned by and for corporations.

Rather than 'evolution', a better analogy is an arms race. European nations and their citizens are being asked not only to abandon their sovereignty, but to pick up the tab for an immense expansion of the industrial infrastructure so that European corporations can "reach the scale necessary" to compete globally.

The European Commission justifies this call for huge new investments because "countries such as the USA and Japan are making significant, targeted efforts to renew their infrastructures." We have now come full circle: the citizens of both the US and Europe are being asked to pay for infrastructure improvements, largely because the other is doing so. If that isn't enough to generate support, the EEC adds ominously that threats even lurk from "new industrial powers such as Singapore, Taiwan, certain parts of China and Argentina [that] are creating networks which integrate the latest technological advances."[267]

Everyone is in the race

The infrastructure race is not limited to the US and Europe. One of Japan's recent transport improvements, for instance, is the $9.7 billion Akashi Haikyo Bridge, the longest suspension bridge in the world, that makes it possible to drive between Kobe and Awaji islands.[268]

Today, virturally every country is being pressed to expand its infrastructure in order to facilitate global trade. In the South, the creation of an industrial infrastructure is seen as the route by which Third World economies can emulate the rich consumer cultures of the North. Chapter 6 described a few of the many centralized energy installations being planned or built. In addition:

- Five South American countries -- Brazil, Argentina, Paraguay, Uruguay, and Bolivia -- are investing $1 billion to widen, deepen, and straighten 2,100 miles of river to accomodate convoys of barges carrying soybeans, iron ore, and other global commodities. Known as the Hidrovia Paraguay-Parana, the project will require dredging the equivalent of 4 million truckloads of material from sensitive ecological areas, thereby threatening the Pantanal, the world's largest wetland.[269]

- Along with the many energy infrastructure projects mentioned earlier, China is also expanding its road infrastructure: the World Bank, for example, is extending a $400 million loan for construction of the Jinzhu highway, which, the Bank points out, "will improve long-distance travel and promote trade..."[270]

- In clear violation of Indian law, the state of Maharashtra is joining with P&O Australia to build a huge international port in Dahanu Taluka, one of only three regions in India that have been set aside as 'ecologically fragile' zones. Funding is being sought from the World Bank and the Asian Development Bank for the project, which is being opposed by an alliance of fishermen and tribal and environmental organisations.[271]

- Despite many years of protests, the Indian government is still planning to build the huge Tehri Dam, which will flood 27,000 hectares of prime farmland and displace 100,000 people from their homes.[272] The Dhabol Power Project, described earlier, is also at the top of the list. Among its other effects, effluent from the Dhabol plant threatens to destroy fisheries and kill the coconut and mango trees on which nearby villagers depend.[273] But with Matsushita investing $14 million in new air conditioning and washing machine factories, and Fujitsu building a new plant to manufacture telecommunication equipment, it's apparent that the energy needs of TNCs are more important than the livelihoods of traditional villagers.[274]

- The Asian Development Bank has recently loaned the government of Laos funds to build a hydroelectric dam on the Mun River, despite a study showing the dam "will result in ecological, sociological, and economic damage to the region."[275] Not to be outdone, The World Bank also recently agreed to provide Laos with $48 million in financing for a "highway improvement project".[276]

- Nepal is getting help from the World Bank to build the huge Arun III hydroelectric dam project, which includes a 73-mile access road and 300 miles of transmission lines. The dam threatens one of the last virgin forests in the Himalayas, and even the World Bank admits that the project would "bring rapid and irreversible changes" to a remote region currently populated by indigenous tribal peoples.[277]

Almost every such large-scale project harms nearby communities. People's livelihoods are wiped out, local ecosystems are damaged beyond repair, entire villages often cease to exist. Although the affected people often fight back, they are usually given little support. The mainstream view is that infrastructure projects benefit society as a whole, and that only an unfortunate few are negatively affected by them. But large-scale projects like these have systemic impacts that go far beyond their immediate vicinity: since their main purpose is to greatly expand economic scale, they undermine every local economy and community they touch. Meanwhile, the expanded consumption they make possible adds to global environmental burdens.

Unfortunately, local elites, governments, corporations, and the media have succeeded in convincing people that their basic needs can only be met from within the global economy. Participating in that economy means entering a costly infrastructure race. More energy, faster and more extensive transport, more sophisticated communications, more technologically-based educational institutions, more high-tech research facilities -- all become necessary to keep pace with competitors around the world. The great irony, of course, is that the corporations dictating these infrastructure demands are now transnational, and owe no allegiance to the countries or people that pay for them. When

rooted citizens must pay for the needs of unrooted corporations, they've entered a race only corporations can win.

Table 2: Trans-European Network, priority projects

Name of Project	Type	Countries involved
Brenner Axis	high-speed rail	Italy, Austria, Germany
Paris-Brussels-Cologne-Amsterdam-London	high-speed rail	France, Germany, Belgium, Netherlands, Great Britain
Madrid-Barcelona-Perpignan	high-speed rail	Spain, France
Madrid-Vitoria-Dax	high-speed rail	Spain, France
TGV Est	high-speed rail	France, Germany, Luxembourg
Betuwe Line	conventional rail	Netherlands, Germany
Paris-Lyon-Torino	high-speed rail	France, Italy
Via Ignatia	motorway	Greece, Bulgaria
Patras-Athens-Bulgaria	motorway	Greece, Bulgaria
Lisbon-Valladolid	motorway	Portugal, Spain
Cork-Stranraer	sea crossing, road and rail	Ireland, UK
Milan Malpensa	airport improvement	Italy
Oresund Bridge	strait crossing, road and rail	Denmark, Sweden
British West Coast line	high-speed rail	UK

Nordic Triangle	conventional rail	Denmark, Finland, Norway, Sweden
Ireland-Britain-Benelux	tunnel under English Channel*, bridge across Irish Sea	Ireland, UK, Belgium, Netherlands, Luxembourg

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Chapter 10: The Rules of the Game: Free Trade

"Bigness is the condition of America ... because ever since World War II it has been the function of the national government -- fulfilling, it is presumed, the will of the people -- to foster and promote it."

Kirkpatrick Sale, Human Scale[1]

Virtually every nation is shaping its economy to match the scale at which transnational corporations operate. The hidden subsidies involved in that reshaping have enabled corporations to grow tremendously in economic power; entire nations now find themselves dependent upon the same businesses whose growth they have so lavishly supported.

More than just investments in an industrial infrastructure have been involved, however: societal laws, rules, and regulations have also been rewritten in order to respond to and facilitate each corporate colonisation of a new commercial niche. Even such a monumental undertaking as the unification of Europe -- involving fundamental changes in monetary and fiscal policies, customs procedures, and democratic processes -- has been largely designed by the corporate world and its lobbying arm, the ERT.[2]

Unfortunately, the co-mingling of government and corporate interests has become so normalized that the ERT's role was not viewed by the mainstream as the equivalent of a corporate coup d'état, but as the exercise of big business' legitimate rights. Today there is so little out of the ordinary in the notion of corporations as institutions of governance that a British think-tank could

seriously propose 'privatizing' entire African nations -- giving corporations the responsibility for running them in exchange for an agreed-upon return to earnings.[3]

To a significant extent, corporate goals were effectively merged with Northern governmental priorities as early as 1944, at the Bretton Woods conference. Agreements signed at this meeting gave birth to The World Bank, the International Monetary Fund, and the General Agreement on Tariffs and Trade (GATT) -- institutions that have guided the global economy ever since. The primary functions of these agencies have been the systematic encouragement of international trade and the promotion of Third World 'development' along industrial/consumerist lines. Both of these goals guaranteed that the markets and resources needed for uninterrupted industrial growth would be available.

In the more than fifty years since they were created, the Bretton Woods institutions have pushed virtually every country in the direction of more trade -- and have thereby expanded both the power and scale of the trading bodies themselves, the transnational corporations.

More recently, the North American Free Trade Agreement (NAFTA), the Uruguay Round of GATT negotiations, and the Maastricht Treaty have tightened this alliance between government and corporate power. The goals -- economic expansion through increased trade -- have remained largely the same. But now virtually any barriers to trade are to be systematically dropped, giving corporations access to bigger markets and to even more of the world's resources -- all with minimal government or public interference. The imperatives of

growth and expanded trade have become institutionalized as fundamental goals of government policy.

A recent addition to the framework set up at Bretton Woods is the World Trade Organisation (WTO), now a main locus of corporate power. Through the WTO, government decisions restricting corporate activities can be stricken down by an unelected panel of 'trade experts' -- largely drawn from the corporate world -- if it determines those laws are 'barriers to trade'. There are no opportunities for labour representatives, consumer organisations, environmental groups, or indigenous people to present their views; the meeting is not open to the public, and documents submitted are kept secret.[4]

The next phase in the process of economic globalisation is the Multilageral Agreement on Investment (MAI), which aims to open up all remaining sectors of national economies to transnational corporations. The agreement is currently being negotiated at the Organisation for Economic Cooperation and Development (OECD), which represents the wealthiest industrialised countries. If passed into law, it will force governments to treat foreign investors the same as local companies, ensuring that no country can favor local producers over corporations based in other countries. The MAI is also likely to prohibit 'performance' requirements, such as laws that require companies to hire local people or pay acceptable wages. The MAI ensures the mobility of capital, allowing it to flow unimpeded to wherever it can get the highest return.[5]

Recent economic meltdowns in Asia, Russia, and Latin America are a direct consequence of this hyper-mobility of capital. But the architects of the global economy are pressing forward with more of the same, using supra-national

institutions like the International Monetary Fund to override national efforts to insulate their currencies from global pressures. According to an April IMF communique, the Fund's Board of Governors believes that

> "it is now time to add a new chapter to the Bretton Woods Agreement by making the liberalisation of capital movements one of the purposes of the Fund and extend as needed the Fund's jurisdiction for this purpose."[6]

These institutions -- and the WTO and MAI in particular -- have the clear aim of eliminating people's ability to define local needs and run their communities as they see fit. Once they are in place, local and even national laws will be increasingly subservient to the needs of international commerce. The 'rules of corporate behaviour' will be the rules governing the entire planet.

Depending on corporations

For many years, governments have acted upon the belief that economic vitality depends upon the growth of large-scale industries. Although this belief took most dramatic form in the communist world -- where the state controlled and supported virtually all industries -- 'free-market' nations have been similarly convinced of the importance of supporting industry, even when the firms themselves remained largely in private hands. As Robert Reich notes,

> "In return for prosperity, American society accepted the legitimacy and permanence of the core American corporation.... [G]overnment officials

> took it as one of their primary responsibilities the continued profitability of [these] corporations".[7]

Many nations outside the communist world formalized this marriage between government and industry by owning companies in areas critical to industrial development -- energy, transport, communications, and advanced technologies. Italy has long nurtured its national holding companies, including IRI (Istituto per la Ricostuzione Industriale), which was set up by Mussolini to spur industrial growth. Its several hundred companies include the telecommunications giant STET, and the national airline, Alitalia. Direct capital transfers from government to these industries totaled £17 billion in the 1980s alone, although many are now being privatized.[8] France nurtured and only recently divested itself of dozens of industries -- ranging from automaker Renault and oil company Elf Aquitane to chemical manufacturer Rhône-Poulenc and tobacco company Seita, maker of Gauloise cigarettes.[9] Groupe Bull, the third largest computer maker in Europe, has been part-owned by the French government since 1975, and recently received an additional $2.1 billion investment while being readied for privatisation.[10] Only in recent years has Britain divested itself of its stake in industries like British Telecommunications and British Airways, sometimes putting them in private hands at a fraction of the cost it took to build them.

Even when such companies are not owned in whole or part by the state, governmental intervention on behalf of large-scale industries has long been accepted practice -- although such support runs counter to what are supposed to be the rules of the free enterprise game. John Kenneth Galbraith pointed this out a quarter century ago:

> "In the traditional image of the corporation, a conceptually sharp, even immutable line divides the corporation from the state. There is government; there is private enterprise; the two do not meet. ... Only someone with an instinct for inconvenience suggests that firms such as Lockheed or General Dynamics, which do most of their business with the government, make extensive use of plants owned by the government, have their working capital supplied by the government, have their cost overruns socialized by the government... are anything but the purest manifestation of private enterprise. And this being so of Lockheed, the question certainly does not arise with American Telephone & Telegraph, or General Electric."[11]

Galbraith's point can be applied in numerous other cases. For example:

- Germany routinely supports its largest industries through direct subsidies and tax incentives. According to one government official, Volkswagen is to Germany "what apple pie is to the Americans", and so VW receives especially generous treatment -- such as the recent $62 million subsidy it received from the state of Saxony.[12]

- Airbus, the world's number two aircraft manufacturer, is a European consortium jointly owned by British Aerospace, Daimler-Benz (Germany), Aerospatiale (France), and CASA (Spain). The company pays no taxes, and it is estimated that company has received $20 billion in government subsidies since 1970.[13]

- In France, the government bailed out the country's largest bank, Credit Lyonnais, after a series of bad loans -- including an investment in the Channel Tunnel -- threatened it with insolvency. The most recent infusion of taxpayers' money brings the total in state aid to £7 billion.[14]

- Overall, the European countries comprising the European Union spend vast sums each year supporting various sectors of the industrial economy. In the early 1990s, for example, the nations of the European Union were providing the manufacturing sector with some 43 billion ecus annually in public assistance.[15]

- Japan is famous for its 'industrial policy', a form of state-supported capitalism in which government and industry closely coordinate their efforts. A similar "close, complex and productive relationship between government and business" has been cited as the reason for the rapid expansion of Asia's so-called 'Tiger' economies -- South Korea, Taiwan, Singapore, and Hong Kong.[16]

- In the United States, the smallest businesses are forced to sink or swim, while the biggest are often rescued from troubled waters by the government: the Chrysler Corporation, for instance, was able to avoid bankruptcy in 1979 thanks to government-guaranteed loans of $1.2 billion.[17] The US government also has a number of programmes aimed at helping those corporations involved in international trade and investment. The Market Access Programme, for example, provides about $100 million annually to companies like Sunkist, Miller Beer, Campbell's Soup, McDonald's, and M&M Mars to advertise their products abroad. The Overseas Private

> Investing Corporation (OPIC), meanwhile, provides loans, loan guarantees, and risk insurance to companies and individuals that invest in so-called 'emerging markets', and already protects $3.2 billion in speculative investments in Asia, Latin America, Russia, and elsewhere. If those investments go bust, American taxpayers will have to reimburse investors.[18] In general, tax policies in the US favor large corporations: for example, deductions for R&D, as well as such programmes as the Foreign Sales Corporate Tax Credit, enabled aircraft giant Boeing to avoid paying any federal taxes in 1995; instead, the corporation received a $33 million rebate.[19] During the current seven year period, it is estimated that tax breaks for transnational corporations will reach $95 billion; an additional $7 billion in breaks will go to banks and other financial institutions, while insurance companies will get $204 billion.[20]

Supra-national bodies also support and subsidise large scale. Funding from the World Bank, for example, is systemically biased in favor of large projects, as Susan George has documented.[21] And as the global economy grows like a house of cards, the International Monetary Fund stands by to prop it up whenever it teeters. Thus, when free trade, market 'liberalisation', and high technology combined in 1998 into economic crises that quickly engulfed Thailand, Korea, Indonesia, and Russia -- and pummelled stock markets everywhere -- billions of dollars in IMF funds were sent into the breach. These funds come from the treasuries of national governments, and ultimately from the pockets of taxpayers. Those that are bailed out include banks, corporations, and speculators in international markets.

Greener pastures

Corporations have grown fat through government support, but the corporate form has no capacity for loyalty. Trade rules have given them the ability to shift production from country to country at will, and corporations are no longer 'national' in any meaningful sense. Instead they roam the world seeking low wage regimes, lax environmental rules, and even bigger subsidies. According to Dave Phillips of Earth Island Institute, the tuna-canning industry in America cut labour costs by more than half by shifting operations from California to Puerto Rico, where a labour force was available for $7 per hour. Puerto Rico was abandoned in turn for American Somoa, where $3.50 per hour was the going wage. From there, companies shifted to Ecuador, where workers were paid only $1 per hour, then to Thailand where wages were only about half that rate. Some companies are already moving on to Indonesia to cut labour costs still further.[22]

The 'race to the bottom' provoked by free trade rules offers far greater advantages to large firms than smaller, more locally rooted ones, as David Korten explains:

> "The more readily a firm is able to move capital, goods, technology, and personnel freely among localities in search of such advantage, the greater the competitive pressure on localities to subsidize investors by absorbing their social environmental, and other production costs. The larger and more open the markets, the greater the profit opportunity they present to firms that are sufficiently large and nimble ... and the greater their competitive advantage over smaller local firms that remain rooted in a particular community and play by its rules."[23]

While massive subsidies are offered in the hopes of luring transnational corporations away from other countries, nowhere are governments offering similar support for small shops, small-scale farmers, or local producers -- even though such businesses provide more jobs than large corporations per unit of output. Meanwhile, the subsidies and tax breaks given large businesses add to the tax burden borne by everyone else. According to Richard Barnet of the Institute for Policy Studies, corporations operating in the US in the 1950s paid 23% of all federal income tax; by 1991 the corporate share had dropped to 9.2%.[24] Similarly, the portion of local property tax revenues paid by corporations dropped from 45% in 1957 to 16% in 1987.[25] In both cases, the difference has been made up by individuals, family farmers, and small businesses.

A recent UN study revealed that at least 59 of the 83 countries surveyed offered some form of incentive to transnational corporations.[26] An exhaustive list of such inducements would be impossible, but a few examples reveals the trend:

- Apparently approving of the maxim that what's good for automobile manufacturers is good for the country, governments seem to reserve the biggest subsidies for car factories. Portugal invested over $483 million to lure a factory jointly operated by the Volkswagen and Ford corporations; the plant only accounted for 1,900 new employees, a public cost of $245,000 per job. Mazda was given incentives worth $48.5 million by the state of Michigan for a new plant, while Mercedes-Benz received $250 million in 1993 from Alabama to set up shop there -- a cost of $166,000 per new job created. BMW received a subsidy package worth £45-50 million from

national and regional governments to build a new engine plant in Britain; but since the corporation's plans included closing an existing engine factory near Birmingham, no net jobs were even created. BMW did even better in the United States a few years earlier, when South Carolina offered subsidies totalling $130 million for siting a plant in that state.[27]

- The Japanese electronics firm JVC received substantial local subsidies to set up operations in Nancy, France, in 1995. In 1996, the company picked up and moved everything to Scotland, where labour costs were lower -- and received a £300,000 subsidy for the move from the European Union.[28]

- Local governments within the same country often compete with one another for corporate favors. In the United Kingdom both Scotland and Wales tried to convince Korean electronics giant LG to build an electronics products factory in their region. It appears Wales has won, thanks to subsidies totaling £150 million.[29]

- The infamous maquiladoras on the Mexican side of the US border prove that direct financial payouts are not always needed to lure corporations. Manufacturing wages one-tenth of those in the US have been the major draw, along with restrictions on labour rights and union activity, lax enforcement of environmental rules, and exemption from property taxes. By 1993 some 2,200 factories had been set up by such corporations as GE, General Motors, RCA, Westinghouse, Honeywell, and hundreds of others.[30]

Opening markets

Free trade rules not only enable corporations to site their production facilities wherever it is most advantageous, they also allow them to market their products anywhere in the world. In the name of "breaking down the barriers to trade", for instance, US government officials have been actively working for more than a decade to pry open Asian markets for the benefit of American tobacco companies -- even while many of those same officials have piously supported anti-smoking campaigns at home.

Those efforts were highly successful. Within a year after Japan's market was forced open, cigarettes had become the second-most-advertised product on Tokyo television. South Korea had also closed its market to imported tobacco products and had outlawed all cigarette advertising. But 'free trade' complaints forced open the market -- and reversed the advertising ban as well. In Taiwan, not only was the market to imported cigarettes opened up, but a proposed law banning cigarette vending machines, restricting public smoking areas, prohibiting tobacco advertising, and funding an anti-smoking campaign was scuttled by threats of trade sanctions. Similar efforts forced open markets in Thailand and China. By 1991, a Boston-based research institute reported, sales of American cigarettes were 600 percent higher in those countries thanks to US government intervention in the name of 'free trade.'[31]

With the WTO in place, corporations and their patron governments have a ready forum for raising objections to the laws of other nations, and they have not been shy about using it. While less than 200 trade complaints were handled by GATT in a half-century, the WTO fielded 50 complaints in just its first 18 months.[32] Its first ruling determined that the US Clean Air Act

discriminated against foreign oil refiners; the US was ordered to change the law or face sanctions.[33]

Not only are environmental, food safety, and labour laws threatened by the free trade dogma: the WTO will also be used to ensure that nations don't stray from the industrial-consumerist fold. Thus the US and the European Union threatened to haul South Korea before the WTO because of its support for a 'frugality' campaign: the US and the EU argued that efforts to limit luxury consumption might reduce South Korea's purchases of imported goods, and would therefore be a barrier to trade.[34] It is likely that the WTO will also be used to ensure that Third World governments are powerless to protect their cultures from being bombarded by films, television broadcasts, and other media with a western, urban-consumer message.

If, like Coca-cola, the largest corporations in the world need to "make it impossible for the earth's billions to escape" their products, national and international laws have become their strongest allies.

'Regulating' the corporations

The recent free trade agreements are probably the most egregious example of the way national and international laws have been rewritten to serve the interests of transnational corporations. Without a doubt, one of the most significant positive shifts in public policy would be to renegotiate these agreements, this time putting the interests of people and the environment -- rather than corporations -- at the forefront.

But even though many activists from the local to the international level are aware of the corporate motives behind the trade agreements, their strategies often fail to aim at fundamentally shifting course; instead they attempt to 'regulate' corporate behaviour even while granting them the expanded power a globally integrated economic system provides. Unfortunately, this approach actually helps to promote the corporate agenda: it lulls people into believing that nothing can be done about the 'inevitable' trend toward corporate hegemony, while falsely assuring them that communities and the environment will nonetheless be protected.

This was clearly the case with NAFTA. Looked at broadly, the goals of NAFTA were to bring still more of North America's population into the industrial-consumer fold, and thereby expand the markets of corporations large enough to engage in international trade. Nonetheless, many environmental organisations supported the treaty once a few 'side agreements' to monitor and regulate corporate environmental behaviour were appended.

Unlike the environmental groups that supported NAFTA, the CEO of Campbell Soup Company -- last seen shivering with business excitement -- knew precisely what this trade agreement was all about:

> "In Mexico, our opportunities have been significantly broadened with the passage of NAFTA. With doors open wider to international trade, Mexico's 85 million people beckon as a highly attractive market, where nearly 9 billion servings of soup are consumed each year.... Mexican consumers are also showing preference for our convenient dry soup varieties to replace traditional homemade soup" (emphasis added).[35]

The shift from "traditional homemade soup" to Campbell's "convenient dry soup" speaks volumes about the deeper impacts of NAFTA. Whether or not Campbell's facilities in the US, Canada, or Mexico adhere to various environmental regulations is of miniscule consequence compared to the environmental impact of pulling 85 million people further along the path of American-style consumption. As Alan Thein Durning has pointed out:

> "Citizens of [the industrial] nations typically consume 10 times as much energy as their developing country counterparts, along with 10 times the timber, 13 times the iron and steel, 14 times the paper, 18 times the synthetic chemicals, and 19 times the aluminum. The consumer societies take the lion's share of the output of the world's mines, logging operations, petroleum refineries, metal smelters, paper mills, and other high-impact industrial plants. These enterprises, in turn, account for a disproportionate share of the resource depletion, environmental pollution, and habitat degradation that humans have caused worldwide. A world full of consumer societies is an ecological impossibility."[36]

NAFTA's side agreements no more address the treaty's systemic impacts than picking up trash along highways addresses the systemic impact of cars. But these side agreements duped many environmental organisations into supporting NAFTA, and their seal of approval ultimately paved the way for its passage.

Corporations have worked successfully for decades to rewrite the rules of trade for their own benefit. Rather than accepting the premise of economic

globalisation and working to mitigate its worst impacts -- through 'retraining' programmes for displaced workers, through environmental 'side-agreements', or through outside 'monitors' of conditions in transnational factories -- it is time to rewrite the laws themselves. This time, they should be written for the benefit of people in their diverse cultures, and for the sake of the planet itself.

Chapter 11: Rules of the Game: Regulations

> "Most of us sit idly by, watching the planet's ecosystems being shredded by unnecessary 'developments' and unneeded products, its species genetically engineered, poisoned and displaced, the vast majority of the world's peoples deracinated, impoverished and enslaved. Most of us sit idly by, dreaming of new regulations that never worked and never could work."
>
> Peter Montague[37]

In setting up the framework for what has become a corporate-dominated world economy, the Bretton Woods Agreement and the treaties that followed are obviously tilted in favor of the large and global. But what of other 'rules of the game', like regulations with the avowed purpose of protecting human health and the environment? Since the goals of virtually every national government now mesh seamlessly with the corporate agenda, it is not surprising that most government regulations do little to limit corporate activities; many regulations,

in fact, systemically support the large and global at the expense of the small and local.

Taken as a whole, environmental regulations have been largely ineffective. In 1995, The Center for Economic and Security Alternatives in Washington, DC conducted a study to measure changes in environmental health in nine industrialised countries. The resulting Index of Environmental Trends, which combined 21 indicators of environmental quality into a single numerical 'index', revealed that despite a quarter century of regulation, environmental health was deteriorating in all nine countries.[38] (see table X on page Y).

Table 1

RANKING FROM LEAST TO MOST ENVIRONMENTAL DETERIORATION, 1970-1995

Denmark: -10.6%
Netherlands: -11.4%
Britain: -14.3%
Sweden: -15.5%
West Germany: -16.5%
Japan: -19.4%
United States: -22.1%
Canada: -38.1%
France: -41.2%

Data from: Gar Alparovitz and others, INDEX OF ENVIRONMENTAL TRENDS (Washington, D.C.: National Center for Economic and Security Alternatives, 1995), pg. 2; cited in Rachel's Environment & Health Weekly, #613, Aug. 27, 1998.

Despite this grim record, many people still have faith in those regulations. They point to the difference between much of the industrialised world, where regulations are comparatively strong and the environment relatively clean, and the Third World, where regulations are much weaker and the environment is often heavily polluted.

Even if real progress were being made towards environmental health in the North, this sort of comparison neglects the way Northern consumption damages ecosystems thousands of miles away, in poorer countries. Now that free-trade rules give companies expanded freedom to site production facilities wherever it suits them, the North's stronger regulations have led many heavily-polluting industries to relocate to the South -- out of view of concerned Northern citizens and beyond the reach of their regulatory agencies. Similarly, much of the food consumed in Northern countries comes from the Third World, where chemical-intensive, monocultural agriculture leaves behind degraded land and pesticide-poisoned farmworkers. The impact of much of the North's consumption is thus felt in the South, where governments all too often sacrifice their country's environmental health in exchange for foreign investment. The Philippines government, for example, ran an advertisement in Fortune magazine trumpeting the lengths to which they would go in accomodating Northern businesses:

> "To attract companies like yours... we have felled mountains, razed jungles, filled swamps, moved rivers, relocated towns... all to make it easier for you and your business to do business here."[39]

Practices like these not only lead to irreparable environmental damage, they can make survival impossible for indigenous people whose livelihoods depend upon intact ecosystems. Thus, while many Americans applaud the regulations on cars, trucks, and petroleum refineries that have marginally improved air quality at home, the car culture weighs heavily even on car-free communities in distant countries. In northeast Colombia, for example, the entire U'wa tribe has threatened mass suicide if Occidental Petroleum is granted oil exploration leases on their land.[40] Their plight is largely invisible, and air quality standards in the North will not improve it.

Those with faith in the North's regulatory regime argue that if 'development' is allowed to proceed unimpeded in the Third World, those nations will eventually have the resources to enact and enforce environmental standards as strict as in the North, even if the situation worsens in the short term and devastates a few unfortunate cultures like the U'wa. But even the strongest environmental regulations cannot make up for the overall impact of industrialising the Third World. Consider just one small measure of that impact, gleaned from State of the World 1997:

> "In China, domestic car production has been growing at more than 15 percent annually; the government plans to increase automobile output from 1.4 million units in 1994 to 3 million units in 2000. In Vietnam, import quotas for cars tripled in 1996, and sales of four-wheel vehicles are projected to increase sixfold between 1995 and 2000. Vehicle sales and registrations are surging in India, Indonesia, Malaysia, and Thailand as well. Around Asia, the shift to transportation systems that emphasize private automobiles is in full swing."[41]

Needless to say, this shift is being promoted -- directly and indirectly -- by government policies and public subsidies. Perhaps sometime in the next century, when a sufficiently large proportion of Asia's present-day bicycle-riders have become drivers of sports utility vehicles and minivans, those countries will enact 'stiff' regulations to mitigate some small part of the environmental damage done. Meanwhile, corporations, governments, the World Bank, the WTO, and other agents of the industrial/consumer system will be working to expand the market for cars elsewhere -- in Africa, perhaps -- to satisfy their need for growth.

Even with the strongest possible regulations, the notion that industrialisation is good for the environment requires a highly developed form of mental conjuring. Additional sleights of mind are needed to dispense with the question of whether the planet has sufficient resources for the Third World to develop along industrial-consumerist lines in the first place.

Regulatory myths

In the most industrially-advanced nations, massive bureaucracies have been created to monitor and protect the environment and food supply. In the US, for example, the presence of the Food and Drug Administration (annual budget more than $1 billion) and the Environmental Protection Agency (more than $6 billion) lead most Americans to believe that their health and the nation's environment are adequately safeguarded. But current regulations are simply inadequate to the task, given the scale at which industry is now manipulating nature.

Peter Montague of the Environmental Research Foundation has studied the regulatory system for toxic chemicals in the United States, and what he has found would shake the confidence of the most jingoistic American. Some 70,000 chemicals are now in use in the US, and new technologies add 1,000 more chemicals to commercial markets every year. Although most people assume that the government has tested all of these for their safety, the agency responsible, the National Toxicology Program (NTP), only has the capacity to study about 25 new chemicals each year -- and even then considers only their carginogenicity, ignoring effects on immune systems, reproductive functions, and major organs. What's more, these chemicals are studied in isolation -- despite the fact that combinations of just two or three common pesticides have been found to cause up to 1,600 times more damage to human health than any one of the pesticides by itself.[42]

Given its limitations, it is not surprising that the NTP has only removed nine chemicals from the market in 21 years. The fact is, neither the NTP nor any other agency has the ability to fully evaluate the dangers of 1,000 new chemicals every year. A study in the journal Science points out that testing the commonest 1,000 toxic chemicals in unique combinations of three would require approximately 166 million experiments. Even if just one hour were devoted to each experiment and 100 laboratories worked 24 hours a day, seven days a week, the process would take over 180 years to complete.[43] At current rates of industrial 'progress', another 180,000 new chemicals would have entered the market in the meantime.

The notion that the government effectively regulates the chemical industry is clearly a myth. Corporations introducing new chemicals are, in fact, largely 'self-regulated' in America: they are required to report to the EPA any information indicating that their chemicals "present a substantial risk to human health or the environment." Although penalties are assessed for non-compliance, corporations neither comply with the law, nor does the government have the ability to force them to. Montague points out that when the Chemical Manufacturers Association negotiated an "amnesty" to allow companies to submit data they had previously withheld,

> "more than 120 companies sent EPA 11,000 studies or reports of adverse health effects from chemicals on the market that had never been reported in scientific literature. The DuPont corporation alone submitted 1,380 studies; the Ciba-Geigy corporation submitted 580; Shell Oil corporation submitted 351; Hoescht Celanese corporation submitted 200.... Clearly, any taxpayer, or any member of the public hoping their government is going to protect them from toxic chemicals, will be greatly disheartened by these revelations."[44]

Although the 'revolving door' between industry and regulatory agencies calls into question the validity of many regulatory decisions, simple malfeasance on the part of EPA is not the reason for its shortcomings in this instance:

> "the EPA ... is powerless against the chemical corporations, who have bigger staffs, <u>much</u> bigger budgets, and many <u>many</u> more lawyers than EPA will ever have."[45]

This is another demonstration of the absurdity of public policy today: even as corporations outstrip governments in wealth and power, those same governments continue to support further corporate growth; and while governments spend billions of dollars 'regulating' the products churned out in corporate laboratories, additional billions in government funds are spent to help corporations develop still more new products. The public, which pays for both, must suffer the health and environmental consequences as well.

Biotechnology will no doubt provide major new opportunities for creating regulatory mechanisms at public expense. After many years of support for genetic engineering from governments around the world, the technology reached a new level with the cloning of the first mammal by scientists in Scotland. The cloned sheep set off a wave of public hand-wringing, and US President Clinton was sufficiently moved to form a blue-ribbon Ethics Commission to consider the moral implications of this latest advance. Meanwhile, the government he heads continues to funnel billions of tax dollars into further biotechnology research, and the US patent office is busily doling out commercial patents on new life forms.

Bigger scale needs more regulations

A commonly heard complaint from Big Business is that regulations are costly and meddlesome, interfering with the ability of companies to function and even hampering the smooth operation of an otherwise perfect free market. What is never acknowledged, however, is that most regulations and the agencies that administer them would be unnecessary if the scale of industry and its technological manipulations of nature were not so large. A National Toxicology

Program, for example, would not be required if 1,000 new chemicals weren't being developed each year; nor would a Nuclear Regulatory Agency be necessary if nuclear power were banned outright. In that sense, money spent on regulatory agencies are actually a form of indirect subsidy to large-scale industry.

Many other large-scale activities create problems -- and then require government regulation -- simply because of their scale. When small farmers raise animals, for instance, the manure produced is beneficial, since it can be used to replenish the fertility of fields and pastures. But the industrialisation of agriculture separates animal husbandry and feed production into two large-scale, intensive activities: huge feedlots with hundreds, thousands, or even millions of caged and penned animals on the one hand, and vast monocultural tracts for growing animal feed on the other. The first of these produces tonnes upon tonnes of manure that become a serious pollution problem (requiring regulatory oversight); the other requires factory-produced chemical fertilisers and pesticides that are hazardous to the health of factory workers and can poison soil, groundwater, and food itself (and so also requires regulatory oversight). As Wendell Berry aptly remarks,

> "The genius of American farm experts is very well demonstrated here: they can take a solution and divide it neatly into two problems."[46]

Far from hampering corporate interests, regulatory agencies provide corporations with valuable benefits. Though these agencies are often 'captured' by the corporations they are meant to regulate -- and in the best of circumstances have only a limited ability to enforce their own rules -- they

nonetheless serve to convince the public that their interests are being protected. The stamp of approval given by agencies like the EPA and FDA is like a public sedative, calming nerves that might be jittery over corporate involvement in nuclear technologies, pesticides, food additives, genetic engineering, and more. In this way, the American public's widespread opposition to biotech foods was largely defused by the FDA's endorsement of rBST -- Monsanto's genetically engineered hormone that increases milk production in cows -- despite lingering questions about its impact on human and animal health.[47]

Many years of government agency oversight of industrial practices have had a remarkably soporific effect on the American public. When a researcher in New Hampshire went into a coma and died several months after spilling a single drop of a highly toxic mercury compound on her gloved hand, newspaper reports implied that the public was safe simply because the compound is in the hands of industry:

> "The general public doesn't have to worry about encountering dimethylmercury, [a chemistry professor] said. While small amounts of it do occur naturally in rare cases, usually it has to be manufactured by a chemical company" (emphasis added).

Despite this odd disclaimer, the article later notes that dimethylmercury was responsible for the death of two secretaries who worked near a warehouse where this compound was "improperly" stored.[48]

Regulations penalise small scale

As Helena Norberg-Hodge has argued, government regulations not only indirectly benefit the largest enterprises, they also penalise smaller ones.[49] The cost of complying with mounting layers of regulations often becomes so onerous that it can represent a barrier to entry for all but the largest and most highly capitalized companies. It is therefore not surprising that biotech giant Monsanto opposed a bill in the US Congress that would have eased EPA regulations on genetically-engineered plants. According to Henry Miller of the Hoover Institution, "Monsanto has had a policy of trying to keep regulatory barriers high" so other companies -- even large seed companies -- will find compliance too expensive to enter the market.[50]

While many regulations are needed because of large-scale production, they burden small producers disproportionately. Large-scale food-processing, for example, takes place in factory-like facilities; the foods usually contain numerous artificial preservatives, flavorings, and colorings, and even traces of pesticides; they are transported long distances, and often stored for weeks, months or even years before consumption. Such foods do require substantial monitoring and regulating to ensure public health. One consequence of America's increasingly mass-produced food supply, for example, is that salmonella cases have more than doubled in the past 20 years, and the Center for Disease Control warns that "industry consolidation and mass distribution of foods may lead to large outbreaks of food-borne disease".[51]

But when the regulations imposed because of the hazards of mass-produced foods are applied to small-scale producers, it can be financially ruinous for them -- even though their products are often far safer, and are sold in face-to-face transactions unseparated by layers of corporate anonymity. Because of

European Commission food processing regulations, for instance, countless small-scale cheese producers -- whose traditional varieties have for centuries been made in home kitchens or cheese rooms attached to barns -- have been forced to give up their livelihoods rather than meet the exorbitant costs of installing stainless steel kitchens, tile floors, industrial pasteurisers, and other requirements for marketing according to EC rules.

In the US, similar health rules hurt small producers while benefiting larger ones. For example, the FDA is proposing that all apple cider be pasteurised, or else carry a label that warns consumers that the product "might contain harmful bacteria known to cause serious illness." In the state of Vermont, where cider has never been linked to any illness, such a warning label would turn away so many consumers that most of the state's small cidermakers would be put out of business. The two largest cider producers -- which account for 80% of production -- already pasteurise their product and would benefit from the losses of their 45 smaller competitors.[52]

Laini Fondiller, an organic goat cheese maker in Vermont, has been fighting the state Agriculture Department over similar rules. Since no commercial pasteurisers are available for small-scale producers like her nine-goat operation, she pasteurises the milk by hand on a stove-top. Although her methods are more than adequate, the department argued that she was a "food safety risk", and threatened to prohibit her from selling her cheeses unless she installed an industrial pasteuriser -- one costing more than her annual income from selling cheese. Her angry response is worth quoting at length:

> "You say I'm a food safety risk, when there are large megafarms dumping pesticides, herbicides, fungicides, in untold amounts, not only on their fields, but also on the workers in the fields. I'm a food safety risk, when farmers can inject hormones to make the animals grow faster or make them milk more. I'm a food safety risk and large industrial food processors slosh chemicals and germicides all over their equipment and then pump food through this equipment. I'm a food safety risk when some farms have to change antibiotics every couple of months because of resistance. We allow the production of genetically altered vegetables.... We can sterilize, irradiate, and pour tons of preservatives into our 'foods', but I'm a food safety risk."[53]

All of the processes she describes are needed in order to produce food on an industrial scale; it is likely that they are inherently unhealthy, and many layers of regulatory oversight are needed to ensure that they are not even more so. When small-scale producers selling in a local market must abide by the same regulations, it can easily make it impossible for them to survive.

Wendell Berry, among others, is aware of the role such regulations have played in the decline of rural economies. As he points out, "Sanitation laws have almost invariably worked against the small producer, destroying his markets or prohibitively increasing the cost of production."[54] As a result,

> "... nowhere now is there a market for minor produce: a bucket of cream, a hen, a few dozen eggs. One cannot sell milk from a few cows anymore; the law-required equipment is too expensive. Those markets were done away with in the name of sanitation -- but, of course, to the

> enrichment of the large producers. We have always had to have 'a good reason' for doing away with small operators, and in modern times the good reason has often been sanitation, for which there is apparently no small or cheap technology. Future historians will no doubt remark upon the inevitable association, with us, between sanitation and filthy lucre. And it is one of the miracles of science and hygiene that the germs that used to be in our food have been replaced by poisons."[55]

Ironically, even America's grassroots organic foods movement -- which aims to remove the poisons in food -- is threatened by a regulatory system biased towards large scale. Over the years, numerous standards have been adopted in different regions to define what practices are allowable on certified organic farms. In the name of harmonising these varying local standards, the US Department of Agiculture (USDA) has released a 600-page proposed national organic foods standard. Largely because the proposal would allow the organic label to go on foods that had been genetically engineered, irradiated, or grown with sewage sludge as fertiliser, the record 200,000 comments the USDA received were overwhelmingly negative.

Although this firestorm has caused the USDA to back off temporarily, it is clear that the goal of a national organics standard served the needs of large-scale agribusinesses, which are seeking to exploit the rapidly growing demand for organic products, and which hope to market those products in the global economy. If the organic standard in the US ever includes practices -- like genetic engineering and irradiation -- that are banned in other parts of the world, the 'race to the bottom' will begin, as Ronnie Cummins of the Pure Food Campaign points out:

> "if the USDA gets away with this in the United States, their eventual strategy will be to use the legal hammer of the GATT World Trade Organization (WTO) to force European and other nations to lower their organic standards as well."[56]

Redefining corporate limits

Corporations have steadily colonised more and more spheres of life. Through advertising and media control they manipulate individual tastes, desires, and opinions. They own a large portion of the planet's resources, including the seeds on which much of the world's food supply depends. They have patented new life forms, and claim ownership to segments of the electromagnetic spectrum. They dominate agriculture, healthcare, education, communication, and entertainment throughout much of the world.

Attempting to regulate each of those realms in turn has been a failing endeavor. This is especially so because corporations -- with their lobbyists, campaign contributions, think-tanks, and the 'revolving door' -- exert tremendous influence over the government bodies that would regulate them.

Corporations -- many of which are larger and more powerful than national governments -- cannot be expected to wield responsibly the tremendous power they now have: no matter how well-intentioned the people working within them may be, corporations themselves are inherently without conscience, and have no loyalty to anything beyond their own survival and growth.

Civil society can not much longer survive ever wider corporate intrusion into social and economic life, nor will nature tolerate continued industrial assaults on the biosphere. Put simply, corporations have far exceeded what ought to be their limits. It is time to define those limits and enforce them, with a clear understanding that the right and responsibility for doing so rests with citizens, not with the invisible hand of a supposedly infallible market.

As Richard Grossman of the Program on Corporations, Law, and Democracy argues,

> "If we do not redefine corporations... we will continue to struggle against every corporate intrusion one at a time, just as we have been struggling against every industrial poison, toxic dump and lethal product one battle at a time."[57]

Grossman is right in arguing that citizens must stand up and reclaim the rights that corporations have taken as their own. But corporations have become so powerful and so mobile and have garnered so many legal protections that this path will not be easy. Stripping corporations of the advantages mobility confers, for example, will require cross-border alliances among activists; only if pressure is simultaneously placed on governments everywhere will they be forced back to the negotiating table to rewrite the trade treaties that now give corporations such free rein.

Since corporate power extends out of the boardrooms and into the offices of elected officials, heavy grassroots pressure will also be needed to compel officials to look after the interests of all their constituents, not just those who

make the largest campaign contributions or employ the slickest lobbyists. Strict laws prohibiting any corporate involvement in electoral processes would go a long way towards whittling down the power corporations now wield.

As Grossman points out, few people will initially agree that "excercising soverign authority over all the institutions we create", including corporations, is "a practical way to think and act":

> "Why? Because corporations will take away our jobs? Our food?... Our hospitals? Because we don't know how to run our towns and cities and nations without global corporations? Because they will run away to another state, to another country?... Because it's too late to learn to act as sovereign people?... How long shall we the people, the sovereign people, stand hat in hand outside corporate boardrooms waiting to be told our fate?"[58]

Without steps to dramatically limit the power of the corporate world, attempts to regulate their products and practices will be largely doomed to failure.

In his book Earth in Mind, David Orr retells the story of an eighteenth-century "protopsychiatrist" who developed a means of distinguishing the sane from the insane:

> "Those to be diagnosed he locked in a room with water taps on one side and a supply of mops and buckets on the other. He then turned on the taps and watched: Those he considered mad ran for the mops and buckets; the sane walked over and turned off the taps."[59]

The taps have been running too long, and the mops and buckets can't keep up with the rising waters. It's time to demonstrate our sanity, and turn off the taps.

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Chapter 12: Why Policymakers Promote the Large and Global

"Senators, if your vision of our agricultural future is one of corporate agribusinesses with no family farms, you must vote to give the Commissioner another term in office. If on the other hand you envision a community of productive rural people and the beauty of place which is its natural offshoot, you cannot in good conscience confirm him. You need to urge the governor to appoint someone with a basic concept of sustainability, who values the local economy, and who will encourage us to enrich the land rather than the corporations."

Karen Shaw, Vermont dairy farmer, at confirmation hearing of Agriculture Commissioner Leon Graves[1]

"...the Senate Agriculture Committee voted unanimously to give [Agriculture Commissioner] Graves another two years on the job."

Burlington Free Press[2]

The preceding sections have outlined some of the ways that policymakers are tailoring the places they govern -- their physical infrastructures, their educational and research institutions, their rules of trade, their laws and regulations -- to support the large and global instead of the small and local. Since the trend towards larger, more global scale is the product of human

choices, it is neither inevitable nor irreversible. But if our course is to be shifted, it's important to understand why policymakers so often make the choices they do.

The most obvious reason has to do with money. Global trade and economic concentration are the wellsprings of vast money flows, some of which can be easily diverted for personal gain by influential elites -- both within the government and outside it. More localised economies, on the other hand, are composed of a multitude of widely dispersed small shops, farms, and local producers -- often with fewer monetised relationships -- and so present fewer opportunities for those in positions of power to add to their wealth. In the South for example, dictators like Mobuto Sese Soko or Ferdinand Marcos were able to siphon off their millions only because there were billions flowing into the country for development projects and for direct foreign investment.

The same was true in Indonesia, where almost every major domestic company was tied through complex financial webs to the family of former President Suharto. Thirty years of Suharto's dictatorial rule -- which decimated Indonesia's forests, endangered its native plant and animal species, and devastated indigenous groups like the East Timorese, the Dayak, the Acehnese, and the Papua -- provided Suharto's family a fortune estimated at some $6.3 billion.[3,4] For such rulers, not only wealth, but power itself depends on money flows only the large and global can provide.

Corruption is by no means limited to the least developed countries. The over-development and hyper-speculation that led to the 1997 meltdown of South Korea's economy was exacerbated by a system of bribery and politically

motivated loans that earned one former president hundreds of millions of dollars in graft -- as well as a life sentence in prison before the inevitable pardon by his successor.[5] In Mexico, former President Carlos Salinas de Gortari -- who championed NAFTA and once nurtured dreams of heading the WTO -- now lives in self-imposed exile while his imprisoned brother attempts to explain the source of the $110 million he stashed in Swiss bank accounts.[6]

Even the most developed countries have their fair share of corruption. In the US, President Clinton's former Agriculture Secretary was indicted in 1997 on charges that he regularly accepted gifts and favors from executives of some of the big agribusiness companies regulated by his department.[7] Until recently, 'bribery' was even considered a legitimate tax-deductible business expense in many European countries.

One dollar, one vote

In countries with 'free elections', it is unusual for money given to political leaders to go directly into their pockets; instead it goes into the bank accounts that fund their political campaigns. Television advertising is now a prerequisite for victory at the polls in many countries, a development that not only limits political debate to simplistic soundbites and narrowly compartmentalised themes, but makes the electoral process so expensive that only those with access to vast sums of money can compete. As a result the principle of 'one man, one vote' is rapidly giving way to 'one dollar, one vote'. American oil entrepreneur Roger Tamraz, who contributed $300,000 to the Democratic National Committee in the hopes of getting Administration support for an oil project, succinctly expressed the new reality of money-driven democracy: in testimony

before Congress, he admitted that he doesn't bother to vote since election outcomes are ultimately decided by money, not by voters.[8]

While large corporations and their business elite are able to funnel the necessary funds to candidates friendly to their cause, representatives of the small and local are unable to match them. It is no surprise, then, that even 'democratically-elected' governments are so biased towards concentrated wealth.

This trend has been growing for years in the United States, as demonstrated in the way campaign contributions go hand in hand with subsidies to the contributing corporations. The US Public Interest Research Group, for example, recently reported that Congressional candidates received more than $89 million in contributions from various polluting industries between 1991 and 1996; Congress in turn bestowed $19 billion in subsidies on those same industries over the same period -- a return of $213 for every dollar 'invested' in campaign donations.[9]

The elected officials that are the recipients of corporate largesse are quick to point out that there is no quid pro quo: in other words, the granting of campaign contributions is not out-and-out bribery. What is admitted, however, is that campaign donations give donors 'access' to public officials. If an ordinary citizen telephones or writes an elected representative to offer an opinion on a critical issue, the message is unlikely to reach the official directly, and the response will probably be a computer-generated form letter. On the other hand a major campaign contributor is all but guaranteed a personal reply, and can often arrange face-to-face meetings with the official. The

difference is significant, and is a measure of the way money is dividing the citizenry into two distinct and politically unequal classes.

The wealthier of those two classes regularly use 'access' to bend public policy. In the wake of US Senate committee hearings on campaign finance abuse, Elizabeth Drew, author of Whatever It Takes, a book about the role of money in the 1996 elections, pointed out that

> "money can buy access, but the transaction doesn't stop there.... Access can lead to influence, which can lead to a policy result. This can be an amendment that is pushed, a regulatory ruling, a contract, or special attention from a Cabinet officer."[10]

It can also buy even more. In North Carolina, a contractor seeking an appointment to the state Department of Transportation board contributed $30,000 to the governor's re-election campaign. Failing to understand the 'wink-and-a-nod' subtleties of modern corruption, he asked for his money back when he was passed by for a seat on the board. Among his gripes was that someone else on the board "only gave $19,000".[11]

In another case, a legislative bill that would have scrapped major provisions of the Endangered Species Act turned out to have been written by an organisation representing timber, mining, ranching, and utility interests, including such companies as Chevron and the Kaiser Aluminum and Chemical Corporation. The industry-backed group provided the senator sponsoring the bill $34,000 in campaign contributions the previous year.

Even where cash contributions are not involved, large and global firms now wield so much economic clout that political leaders ignore them at their own peril. This lesson was ruthlessly driven home to the leaders of Asian economies following the region's late-1997 economic meltdown. For a number of years South Korea, for example, resisted opening up its financial markets to foreign-based TNCs. Once the economic crisis hit and the nation needed billions of dollars to stave off collapse, Korea was ripe for blackmail. Within days of the won's collapse, South Korea agreed to let transnational banks like Citibank buy up local banks, and allowed huge insurance corporations like New York Life to exploit local insurance markets.

According to US Trade Representative Charlene Barshefsky, who negotiated the deal under the auspices of the WTO,

> "These negotiations have been going on for years, and we've had to try to wear down governments one at a time.... [I]n they end, they knew that they would compound their own problems if they... continue to close off parts of their markets to foreign investors."[12]

This is not simply another case of the North riding roughshod over the South: the influence of huge, global corporations on sovereign governments is just as pervasive within the North. In Europe, for example, the corporate CEOs that make up the ERT have almost unlimited access to the corridors of national and European power. ERT Secretary-General Keith Richardson defined 'access' this way:

> "Access means being able to phone Helmut Kohl and recommend that he read a report.... Access also means John Major phoning... to thank the ERT for its viewpoints, or having lunch with [the] Swedish Prime Minister just prior to the Swedish decision to apply for EC membership".[13]

While those advancing the corporate agenda have the ear of policymakers, those who speak for small businesses, small farmers, or the environment are not so fortunate. As Ann Doherty and Olivier Hoedeman of ASEED have reported:

> "Eurogroup, a lobby group representing small businesses... has to wait weeks for an appointment with a civil servant, and the highly-regarded, Brussels-based European Environmental Bureau has mangaged to meet only once in two decades with the Commission President."[14]

In the United States, access is similarly skewed towards moneyed interests. President Clinton's practice of 'renting' White House bedrooms in exchange for campaign contributions made tabloid headlines for a while, but the connection between big money and government policy is far more systemic. When a large proportion of the economy depends on a few key industries, the principals who control those industries do not require a night in the Lincoln bedroom to make their needs known. For instance, the arms industry still accounts for 2.5 percent of the US economy -- even after the end of the Cold War arms race -- giving the CEOs of Boeing and Lockheed significant leverage over government policy.[15] Similarly, auto-related industries account for an estimated 20 percent of the American economy, giving oil companies and auto manufacturers even greater clout.[16]

The way this influence is wielded was revealed in a letter sent to Bill Clinton by the heads of some 200 major US-based corporations, shortly before the Kyoto conference on global warming. The letter warned the President against

> "premature agreements that will severely disadvantage the US economy... The US must take care to avoid commitments that will cost US jobs, retard economic growth or damage US competitiveness.[17]

Thus, despite the clear evidence that industrial processes are altering the global climate and putting the health of the entire biosphere at risk, these CEOs recommended doing nothing -- unless, of course, it provides further fuel for the industrial engine:

> "... there is time to determine optimum strategies that are economically sound, comprehensive, market-based, and can be adjusted over time as new data and technologies become available. For example, a policy of accelerated research and development efforts leading to breakthrough technologies..."[18]

Signed by the heads of Exxon, Occidental Petroleum, Mobil, Chevron, Texaco, General Motors, Ford, Chrysler, Boeing, and scores of other corporations that profit from fossil fuel use, the letter is patently self-serving. Nonetheless, economic dependency on these huge corporations leads political leaders to treat such corporate-friendly documents as though they were impeccably logical, impartial, and civic-minded.

The near-term focus of electoral politics only exacerbates the problem: if a policy might lead to an economic downturn or stock market slump in the short run, it can mean political suicide for any leader with the temerity to support it -- even if the policy would have significant social, environmental, and economic benefits in the long term.

The revolving door

Appointees as well as elected officials are influenced by the corporate sector's wealth. The 'revolving door' -- which leads in one direction to government positions and in the other direction to lucrative corporate jobs -- helps explain the policy bias in favor of the largest enterprises among their supposed regulators. The intimate relationship between biotech corporation Monsanto and the the US government is not unusual. Mickey Kantor, close advisor to President Clinton, later became Secretary of Commerce and later still US Trade Representative; today Mr. Kantor is on Monsanto's board of directors.[19] Marcia Hale went from being an assistant to President Clinton to working for Monsanto in Europe; she is now slated to return for another stint in the government.[20] The door between Monsanto and the Food and Drug Administration -- the agency responsible for overseeing many of the corporation's products -- has been spinning so fast it's difficult to keep track of all the comings and goings. Margaret Miller, for a while Monsanto's chief researcher, later obtained a job with FDA reviewing research -- including her own. Michael Taylor, a former staff attorney at Monsanto's law firm, later took over as FDA's policy chief and used his position to craft the labelling language for milk produced with Monsanto's rBGH.[21] And one prominent candidate for

the next head of the FDA is Virginia Weldon, currently a Monsanto Vice President.[22]

Worlds in common

The revolving door between government and Big Business highlights the fact that more than purely economic differences distinguish ordinary citizens from those promoting the global economy. Politicians and the business elite often come from similar backgrounds, have similar educations, and travel in similar social circles. As a consequence, their worldviews -- invariably modern and industrial -- are closely allied. It is therefore much easier for politicians to understand and promote policies based on economic growth, for example, than on the need for community or the intrinsic value of nature. When other cultures are involved -- as when policies threaten the livelihoods of traditional villagers in the Third World -- the worldview gulf is all but unbridgeable.

It is not only corporate executives and western politicians who share the worldview of industrialism. China's communist leadership, for example, has long equated 'bigness' with 'greatness', a notion that any corporate CEO worth his salt would agree with. When the Yangtze River was recently diverted to allow construction of the largest dam in the world, Chinese leaders at the riverside ceremonies revealed not only their pride in gigantic engineering projects, but also the belief -- common to capitalist and communist alike -- that size itself symbolises success. Prime Minister Li Peng, the dam's chief promoter, thus claimed that diverting the river "demonstrates the greatness of the achievement of China's development," while Chinese President Jiang Zemin

declared that it "vividly proves once again that Socialism is superior in organising people to do big jobs."[23]

The security of power

Policy-makers and the world's elite are usually well-insulated from the problems created by their own policies. Crime is largely eliminated from their gated and guarded communities, while hired gardeners ensure that 'nature' is represented by healthy trees, weed-free lawns, and opulent flower gardens. It is unlikely that they will have to contend with a hazardous chemical site or a nuclear facility in their neighborhoods or near their children's schools. The varied wastes from their consumer lifestyles are transported so efficiently to other parts of town (or the world) that it can easily seem that recycling has solved the problem of waste and pollution. They may be aware of the hazards of chemical pesticides and additives in foods, but if so they can easily afford to eat more expensive organic foods, all the while celebrating the consumer 'choice' that enables the less fortunate to eat cheaper, poisoned food.

In some cases, the privileged livelihoods of the influential elite may literally depend on the suffering of others. An entire multi-billion dollar industry has been built around cancer, for example, which creates respectable and lucrative niches for those seeking a high-tech cure for the cancer epidemic. While this approach fits in well with the industrial paradigm, those seeking to eliminate the environmental causes of cancer -- and who thereby call into question many of the processes on which the entire industrial system depends -- are considered radical crackpots. They must struggle for funding, and their voices often go unheard.

This is true in other fields as well. As Wendell Berry points out with regard to agriculture,

> "To turn an agricultural problem over to the developers, promoters, and salesmen of industrial technology is not to ask for a solution; it is to ask for more industrial technology and for a bigger bureaucracy to handle the resulting problems of social upset, unemployment, ill health, urban sprawl, and overcrowding. Whatever their claims to 'objectivity', these people will not examine the problem and apply the most fitting solution; they will reverse that procedure and define the problem to fit the solution in which their ambitions and their livelihoods have been invested. They are thriving on the problem and so can have little interest in solving it."[24]

Industrial solutions only

As Berry suggests, the industrial worldview -- combined with training in the compartmentalised thinking that is a hallmark of modern education -- effectively limits choices to those that further the expansion of the industrial model. This process is at work everywhere. For instance in the United States, rates of teenage suicide have tripled since the 1950s; severe depression affects an estimated 5 percent of children between the ages of 5 and 12, and 10 percent of adolescents[25]; still more have been diagnosed with such emotional disturbances as hyperactivity and Attention Deficit Disorder. If such problems are really so common among American children, something must be fundamentally amiss: perhaps the sea of industrial chemicals in which they have spent their lives has disrupted vital fetal or childhood development

processes; perhaps the breakdown of the extended (and even the nuclear) family has left an emotional void that television and computer games cannot fill; perhaps the flesh-and-blood role models that communities once provided have been supplanted by idealized media images that no child can live up to.

Many such explanations come to mind, but these lines of inquiry might call into question the industrial system itself, and so they are rarely pursued with vigor. Instead an industrial solution -- in this case behaviour-altering drugs -- is sought, promoted, and widely applied. Ritalin is now taken by an estimated 1.25 million school-age boys to 'control' their hyperactivity.[26] Selective serotonin reuptake inhibitors like Prozac, Zoloft, and Paxil have been prescribed for 600,000 more children to 'combat' their depression.[27]

Pharmaceutical corporations are now seeking to formalise the government's tacit approval for the childhood use of such anti-depressants, though they have never been fully tested in children; this would pave the way for direct marketing campaigns to expand their use even further.

All this is quite alarming when seen from the perspective of overall societal health. But when viewed from the industrial model's narrow focus on the health of the corporations that dominate economic life, it is seen as "a positive", in the words of one market analyst: "The [pharmaceutical] companies are looking for expanded markets", he explained, revealing how completely the industrial system has reduced even children to just another marketing niche.[28]

In a similar way even overpopulation must have a solution that emanates from the industrial model -- despite the fact that industrialisation is itself a root

cause of the problem. Almost every policymaker believes that further industrial development (often sugar-coated with western-style 'education' for women) will end the Third World's population explosion, based on the observation that population growth in industrialised countries slowed or stopped once certain levels of affluence were reached. The South is therefore being encouraged to continue developing along the industrial-consumerist track, in the belief that population growth will stabilize when consumption levels rise sufficiently.

Since this theory takes the industrial era as the baseline, the role of modernisation in initiating population explosions in the first place is completely ignored. As Edward Goldsmith points out,

> "the experience has been the same everywhere. As soon as a traditional society embarks on the path of economic development, its population simply explodes. It happened in Britain, where the population was under 8 million when the Industrial Revolution began, and where it increased by more than 7 times before it eventually stabilized. It is happening today wherever economic development occurs..."[29]

Wedded to the notion that viable societies must be based on the industrial model, policymakers have no qualms about hooking the planet's few remaining traditional societies into the global industrial system. If such cultures survive the transition, their populations, too, will explode, but policymakers will have a ready solution: more development.

The 'development-as-solution' theory also ignores the fact that overpopulation is primarily a problem because the planet has a limited capacity to absorb the

impact of human activities -- an impact that multiplies exponentially with rising levels of consumption. One might ask which is the bigger problem: that the world population has doubled since 1950, or that the number of cars -- and everything that goes with them -- has increased tenfold in the same period?[30] Stabilising the world's population by encouraging more industrial development is like 'solving' the problem of overfishing by building more and bigger trawlers. This absurd population policy can only seem rational when viewed through the fragmented lens of the industrial worldview.

The sway of dead economists

When government leaders promote the large and global, they have the dominant economic ideology on their side. Within that ideological framework, economic growth and increasing levels of consumption are the sine qua non of societal success, and increased 'efficiency' is the means of achieving it. If a reason is needed to promote larger scale and higher technology, Adam Smith and his famous pin factory are always available. Smith's Wealth of Nations extolled the virtues of the division of labour at the dawn of the industrial era, and posited that the bigger the production unit, the more specialised -- and therefore more efficient -- its labour could become. Since large production units required large markets, they too became synonymous with increased efficiency.

However valid Smith's theories may have been, they break down when the scale at which they are applied is as large as it is today. There are limits past which 'efficiency' no longer means providing needed goods with less effort, but means replacing millions of people with automated machines to produce goods for

which there is so little real need that a vast brainwashing apparatus -- the advertising industry -- is required. Smith also undervalued the importance of meaningful work, which is often as important to people as the products the industrial machine churns out, and which many of today's specialised and numbingly repetitive jobs fail to provide. For Smith, 'efficiency' largely meant economizing on human labour, but he could not have forseen that 200 years later the industrial system would have consumed so much of the earth's resources and regenerative capacities that the need would be to slow production and consumption, not to increase it indefinitely.

Comparative advantage

Policymakers today also lean heavily on David Ricardo's 18th century concept of comparative advantage, which, at its simplest, means that if a nation specialises in those goods which are cheaper to produce compared with other products, and then trades with countries that likewise specialise their production, both countries will be able to consume more than if they did not trade. In Ricardo's day, cheaper relative production costs depended on such natural attributes as climate and local resources, as well as locally-available capital, technologies, and skills.

Comparative advantage has been taken up by promoters of the global economy as a fundamental justification for free trade. Unfortunately, they overlook important assumptions underlying the model. According to economist Herman Daly,

> "The problem is not the logic of [comparative advantage]. It is the relevance of Ricardo's critical but often forgotten asusmption that factors of production (especially capital) are internationally immobile. In today's world, where billions of dollars can be transferred between nations at the speed of light, that essential condition is not met. Moreover, free traders encourage such foreign investment as a development strategy. In short, the free traders are using an argument that hinges on the impermeability of national boundaries to capital to support a policy aimed at making those same boundaries increasingly permeable to both capital and goods!"[31]

Daly has described other shortcomings of the faith in comparative advantage. For trade to increase efficiency, its costs must be internalized -- another condition which is not met. Trade clearly depends on transport, for example, and most transport costs are externalized: petroleum dependency requires tax breaks, military expenditures, government research funding, and significant externalized health and environmental costs, not to mention a huge publicly financed transport infrastructure. In fact, if economic efficiency is the goal, then today's highly subsidized trade is actually highly inefficient. As Daly facetiously but accurately points out,

> "Americans import Danish sugar cookies, and Danes import American sugar cookies. Exchanging recipes would surely be more efficient."[32]

While Ricardo's economic argument is held aloft by the promoters of the global economy as though it were the holy grail itself, warnings from equally

prominent economists on the same subject are largely ignored. John Maynard Keynes, for example, wrote:

> "I sympathize... with those would would minimize, rather than those who would maximize, economic entanglement between nations. Ideas, knowledge, art, hospitality, travel -- these are the things which should of their nature be international. But let goods be homespun whenever it is reasonably and conveniently possible; and, above all, let finance be primarily national."[33]

This warning is faithfully ignored by mainstream economists, even when the real world invades the rarified atmosphere of economic theory. For example the International Monetary Fund -- with over 1,000 PhD economists on the payroll -- gave the governments of Thailand and South Korea high marks for "sound macroeconomic management" in the months before the collapse of their economies. In the aftermath, the IMF approved a multi-billion dollar bailout of the foreign banks that had flooded the countries with bad loans; to recommend limiting the economic "entanglement between nations" that was at the root of the problem would have made far more sense.[34]

Ignored costs

The externalized costs that call into question the 'efficiency' of international trade also apply to the entire industrial model. Planners and decision makers often point to rising levels of Gross Domestic Product (GDP) as proof of the success of their policies, while failing to recognise that GDP is woefully

inadequate as a measure of societal well-being. Redefining Progress, a group seeking to replace GDP with a more realistic set of indicators, argues that

> "The GDP is simply a gross measure of market activity, of money changing hands. It makes no distinction whatsoever between the desirable and the undesirable, or costs and gain. On top of that, it looks only at the portion of reality that economists choose to acknowledge -- the part involved in monetary transactions.... This [leaves] out two large realms: the functions of family and community on the one hand, and the natural habitat on the other.... During this century, those assumptions have become increasingly untenable. It is not accidental that both the habitat and the social structure have suffered severe erosion in recent years: these are precisely the realms that eighteenth- and nineteenth-century assumptions precluded from the reckoning of national well-being -- in capitalist and socialist economies alike."[35]

When the services provided by the biosphere are excluded from the accounts, it becomes easier to see why corporate arguments against vigorous action on global climate change are accepted by technosphere-bound policy-makers. The economic 'contribution' made by a coal-fired power plant or the long-distance transport of goods enters the accounts, while the far more important but non-monetized contributions made by a healthy ecosystem are ignored.

The industrial worldview is so self-contained that even when monetary values are placed on the costs of climate change, these can be interpreted as new and profitable niches for high-tech commercial enterprises to exploit -- and which will in turn add to GDP. Within the industrial model the possibility of solving

problems at their root by 'turning off the taps' is less desirable than purchasing more mops and buckets.

Not only environmental costs are excluded from the economic reckoning, but social costs as well. While wealth, narrowly measured and unevenly distributed, has increased in the industrialised world, the social price has been high. Robert Reich observes that,

> "For all its riches, the United States now has a greater percentage of its citizens in prison or on the streets, and more neglected children, than any other advanced nation."[36]

As further measures of social breakdown, Reich could have mentioned the proportion of older people whose final years are spent useless and neglected in nursing facilities or 'retirement homes' rather than with their families; the rates of bulemia and anorexia among young women; the number of families that are headed by a single-parent; the rising rates of teen-age suicide; and dozens more.

The US may be worst among 'advanced nations', but it is not alone. In Japan's highly competitive society, businessmen are so renowned for their over-dedication to work that certain stress-related illnesses have been named after them. In England and Finland, countries whose cities were until recently relatively crime-free and non-violent, children under the age of ten were recently charged with killing other children. Even in remote Greenland, where the standard of living has risen to a par with the industrialised world in the past 40 years, the price has been high: alcoholism and drug abuse are now

rampant, and frequent waves of violence strike the island's villages; one in seven males commit suicide, usually in their teens or twenties.[37]

As the Third World 'develops', people there, too, are falling victim to the same forces: according to health activists in India and Africa, there is a direct link between the arrival of MTV and other satellite stations that spread Western culture, and accelerating rates of depression, suicide, violence, and drug abuse among young people.[38]

Such problems were quite rare in traditional cultures, as anthropologists have consistently noted. After spending several years in Ladakh's pre-development culture, for example, Helena Norberg-Hodge concluded that she "had never met people who seem so healthy emotionally, so secure."[39]. Another researcher tried to study depression among pre-industrial peoples in New Guinea, but simply couldn't find any.[40]

The appearance of serious emotional problems among people within or suddenly exposed to the industrial model can be explained in part by the psychological pressures to live up to idealized standards of wealth, beauty, and lifestyle. There may be even deeper reasons. As biologist Hugh Iltis has pointed out,

> "Corn and cows, concrete and cars are not enough to sustain and empower a human psyche that until only a few generations ago lived in daily contact with a variety of plants and animals, a psyche that, winnowed and sifted by natural selection, is genetically programmed to respond positively to nature and its patterns. By destroying so much of

> the natural environment, we humans are now destroying crucial parts of our own psychological as well as physical habitat.... [I]t is a gloomy picture indeed."[41]

Needless to say, classical economics has no meaningful way to account for such psychological costs. Instead, it will add to GDP the money spent on mood-enhancing prescription drugs, therapeutic counseling, and drug abuse rehabilitation, and will count the addition as a sign of progress.

Losing democracy

Classical economics also has no means to measure the undermining of democratic processes, another symptom of the growing scale of the economy. In many small-scale societies -- even those whose systems of governance are not 'democratic' in the narrow sense of regular, secret-ballot elections -- people had a significant degree of control over their own lives and their own community. Helena Norberg-Hodge described this traditional pattern in Ladakh, and the changes brought when the region was hooked into much larger economies:

> "In the decentralised village-scale economy, individuals had a real influence on the important decisions affecting them. They depended on people they knew, and on local resources they controlled themselves. Nowadays, as they are drawn ever more tightly into the socio-economic structure of India, each individual becomes just one of 800 million; as part of the global economy, one of over 5 billion. Their influence over the political and economic forces that affect them is being so reduced that they are essentially powerless."[42]

Today, even those modern systems of governance described as 'democratic' are being subverted by the increased scale of economies and the businesses that dominate them. When the campaign contributions and lobbying arms of huge businesses determine public policy, is this really democracy? When the WTO -- comprised of unelected bureaucrats meeting secretly in Brussels -- can overturn national and local environmental, health, and labour standards, is the will of sovereign people really being represented?

Adam Smith, contemplating the efficiency of an early pin factory, could not have forseen a world in which businesses like General Motors and Mitsubishi dwarf the economies of entire nations. But the impact of large businesses on political processes is not the province of classical economics. In that discipline, over-large businesses are primarily a problem because they can exert too much influence on markets, which require perfect competition to function properly. Thus, the only 'acceptable' reason for intervening in the growing scale of businesses is to limit their monopoly power, not their impact on democratic processes. While anti-trust statutes were occasionally used to limit the scale of certain businesses, economic globalisation has largely removed even that limited rationale: today the assumption is that large scale is required of businesses competing globally.

The rapid expansion and spread of the industrial model has many other costs as well. But the only way any of these enters the economic calculus is when the industrial system finds a commercially viable 'solution'. The widespread pollution of air and water, for example, appear as lucrative niches for companies selling air filters and bottled water. If crime is up, so are revenues

for prison construction and private security firms and companies selling burglar alarms and anti-theft devices -- all of which add to economic growth. Depression in the United States may be an increasingly serious problem, but the Prozac 'solution' adds $1.7 billion to the nation's GDP.[43] The cancer industry is such a large part of the economy of industrialised countries -- providing commercial niches in research, drug development and marketing, hospitals and clinics, self-help books, non-profit agencies, and more -- that preventing it could be economically disastrous; 'cures', on the other hand, would generate immense sales and create an entire new profit center for the drug industry, and would be a boon to the economy.

Given the way economic accounting is everywhere conducted, it is no wonder government leaders are so unanimous in the policies they promote. While policymakers are mesmerized by the upward trajectory of GDP, a more accurate set of economic indicators developed by Redefining Progress -- one that separates losses from gains, accounts for the depletion of natural resources as a drawing down of capital, and accounts for non-monetized parts of the economy -- shows that real economic welfare has been declining for decades.

A different future

This special edition of The Ecologist has described some of the ways that public policies consistently aim towards the large and global, and has hinted at ways the small and local might be supported instead. Many of the steps toward smaller scale can seem tiny and insignificant: when massive government bureaucracies, for example, work hand-in-hand with powerful corporations to build multi-billion dollar transport infrastructures suited to international

trade, the possibility of replacing them with bicycle paths or animal power seems absurdly far-fetched. In isolation, such steps will always be inadequate to stop the momentum of the industrial juggernaut.

The problem is that modern societies are systemically headed towards larger scale and economic globalisation; small, localised alternatives in one area of life or in one part of the world simply cannot flourish if every other part of the system continues its destructive course. Just as the sustainability of indigenous cultures within their own ecosystems offers them little protection against the global rapaciousness of industrialism, even the best-conceived step towards localisation is unlikely to survive if simultaneous steps are not taken on many other levels, in many other parts of the world.

Seen in the context of coordinated efforts to shift current policy, however, such small local steps can take on a much larger significance. If groups from the grassroots to the international level can work together to compel governments to renegotiate their trade treaties, then communities will be better able to define themselves in location-specific ways that lead toward sustainability and equity, and will have the opportunity to support themselves without depending on global corporations. If limits can be set beyond which corporations cannot go, their rape of the environment may cease, and ecosystems will have a chance to heal. If corporations are stripped of rights they should not have, then their corrosive influence on political life can be eliminated, and the constant din of commercialism can be quieted.

As stated at the outset, bringing about such changes will mean overcoming powerful vested interests, and will require fundamentally rethinking the

worldview of industrialism. This may seem a depressingly daunting task, especially since those promoting corporate globalism have so much entrenched power. But the industrial juggernaut threatens everyone: not even the cloistered, gated communities of the rich can shield them forever from the impact of a degraded biosphere or from social collapse.

Time is too short, however, to wait for this awareness to reach the elites of the world. Halting the juggernaut will instead depend upon those most affected by it today: family farmers, small producers and shopkeepers, indigenous people, the poor and dispossesed, and people whose affinity for the natural world is still strong. Each of these groups is under attack in varying ways and to varying degrees, but for all of them the source is the same: an industrial system that has grown so large that it is no longer compatible with life. Alliances between such groups will be needed, since separately they have little hope of changing the trajectory of the entire system.

Unfortunately, these goups often fail to see their commonality of interest, and frequently see themselves as competing for a larger share of the industrial pie. But long term solutions will not be found by dividing up the industrial pie differently -- nor by enlarging it, nor by tinkering with its edges. The problem is with the industrial pie itself, and new recipes must be tried.

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Local Alternatives to Global Agribusiness (Kumarian Press, 2002). He lives with his wife and two children on a small organic farm in South Walden, Vermont.

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