

Beyond Growth or Beyond Capitalism?

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Given the relentless growth of global GHG emissions (currently growing at 2 percent per year, up 70 percent from 1990) and ever-higher concentrations of CO₂ in the atmosphere (currently at 400 parts per million, up 30 percent from 1990), climate scientist Kevin Anderson at the Radical Emissions Reduction Conference (December 10-11, 2013, at the Tyndall Centre for Climate Change Research in the United Kingdom) concluded that "Today, in 2013, we face an unavoidably radical future." The International Energy Agency (IEA) says that "the current state of affairs is unacceptable. ... Energy-related CO₂ emissions are at historic highs" and emission trends are "perfectly in line with a temperature increase of 6 degrees Celsius, which would have devastating consequences for the planet." In similar vein, PricewaterhouseCooper, the UK government chief scientist, and a growing body of academics and researchers are allying current emission trends with 4-degree Celsius to 6-degree Celsius futures.¹ Tyndall scientists drew the only possible conclusion:

We either continue with rising emissions and reap the radical repercussions of severe climate change, or we acknowledge that we have a choice and pursue radical emission reductions: No longer is there a non-radical option. Moreover, low-carbon supply technologies cannot deliver the necessary rate of emission reductions - they need to be complemented with rapid, deep and early reductions in energy consumption - the rationale for this conference.²

How much do we need to cut and how quickly to prevent runaway warming? With the declared aim of keeping average global temperatures from rising by more than 2 degrees Celsius, the Kyoto Protocol required

industrialized countries to cut their average greenhouse gas (GHG) emissions to 5.2 percent below average 1990 levels. For the biggest emitters, this would require cuts on the order of 80 percent to 95 percent by 2050.³ But we have blown right past the Kyoto targets. Instead of falling, developed country emissions have grown, some sharply. One study shows that from 1990 to 2008, emissions from developed country grew 7 percent, led by the United States, whose emissions grew by a whopping 25 percent in just 18 years.⁴ Meanwhile, China's emissions have doubled in just the past decade, and China is now the world's leading GHG polluter, in large measure because it's producing stuff Americans and Europeans used to produce for themselves - but under less salubrious environmental standards. So we're farther behind than ever, global emissions are soaring and, if we continue on this business-as-usual trajectory, we're headed for that "4 degrees Celsius world" before the end of this century.⁵ That's why James Hansen, the world's leading climate scientist, quit his job at NASA to devote himself full time to activism, education and getting himself arrested in front of the White House trying to impress the president and the public at large that we need "radical," "deep" GHG emissions cuts - "urgently" because we face a climate emergency.

So Where Are the "Radical" Solutions?

But the problem is how can we ever make deep cuts in consumption of energy (or anything else) in a capitalist economy? An economy in which we all depend upon growth to provide jobs and higher living standards? This is where the "Radical Emissions Reduction" conference fell flat. When the focus turned from the climate science to social science, no one could suggest anything like the sort of truly radical changes, indeed systemic changes, we would have to make to meet the climate emergency we face. Instead, participants rehashed the same tired anodyne nostrums that have failed to change anything of substance over the past 30 years - "lifestyle" changes, "shaming people" into consuming less, and the like. Andrew Simms of the New Economic Foundation called for "green jobs" to get "more growth without increasing consumption" ([as if!](#)). Naomi Klein, the keynote speaker, called for a "radical movement" to push for "radical emissions reduction." But no one asked the obvious question, which is what would happen to the economy if we actually forced the fossil fuel companies to cut production by 90 percent? Seven of the ten biggest companies on the Fortune Global 500 are oil companies and auto manufacturers. If these companies had to cut production by 90 percent, or even 50 percent, that would mean immediate bankruptcy, economic collapse, global depression and mass unemployment. And not just the auto-oil industrial complex. Fossil fuel use permeates the entire economy: industry, transportation, farming, construction, services, fashion, cosmetics, pharmaceuticals, the plastic junk industrial complex, the internet ... you name it.⁶ There is virtually no sector that is not significantly dependent upon fossil fuels. This means that given capitalism, given our dependence upon these "job creators," the public is never going to support cutting emissions on anything like the scale we need to save the humans - unless someone out there is promising them alternative employment. But who would that be? This is capitalism, not socialism. So growth and the environment seem to be completely at odds. What to do?

Mainstream (capitalist) ecological economists have tried to deal with problem of capitalist growth in one of two ways: Either, with Herman Daly and the anti-growth "steady-state economics" school he founded - which today includes the UK's Tim Jackson (*Prosperity Without Growth*, 2009), Andrew Simms and Victoria Johnson at the UK's New Economics Foundation, and the French décroissance (de-growth) school led by Serge Latouche - these theorists have imagined that capitalism can be reconstructed so that it stops growing quantitatively (or even contracts) but continues to develop internally - much as, Daly suggested, we ourselves stop growing physically at adolescence but continue to develop our capabilities, intellect, skills, etc.⁷

Or, with the pro-growth "green capitalism" school led by Paul Hawken, Lester Brown, Frances Cairncross - which today includes Nicholas Stern, Paul Krugman and others - these theorists have imagined that capitalism could grow more or less forever but that growth could be rendered benign for the environment by imposing carbon taxes, by forging a "green industrial revolution" to "decouple" growth from pollution ("dematerialization") and by relying on consumer demand to pressure industries to go green.

Pro-growth or anti-growth, both approaches assume that capitalism is sufficiently malleable that capitalist fundamentals can be "inverted" such that corporations can, in one way or another, be induced to subordinate profit-making to "saving the Earth."⁸ But what unites both schools of thought is their *a priori* rejection of alternatives to capitalism, their rejection of any kind of economic planning or socialism. So Jonathan Porritt, former

chairman of the UK Sustainable Development Commission, ex-Green Party co-chair and one-time director of Friends of the Earth, spoke for the mainstream when he declared that "Logically, whether we like it or not, sustainability is therefore going to have to be delivered within an all-encompassing capitalist framework. We don't have time to wait for any big-picture ideological successor."⁹

I contend that both these strategies were misguided and doomed from the start because, as Milton Friedman used to say, "Corporations are in business to make money, not to save the world." Saving the world would require that corporations subordinate profit maximizing to ecological concerns. But how can they do this? Companies can embrace environmental reforms (recycling, green products and the like) so long as this saves or makes them money. But they can't sacrifice earnings, let alone put themselves out of business, just to save the humans, because they're not responsible to the humans, to society. They're responsible to their shareholders. And shareholders (who might even be you and me) as investors are capitalists rationally looking to make money, not to save the world. I dissect the problems with the pro-growth "sustainable development" models elsewhere.¹⁰ Here I'm going to elucidate the contradictions and irrational assumptions of the anti-growth school through a critique of the theories of its leading protagonist, Professor Herman Daly.

I argue that Daly, Jackson, Latouche and the steady state/degrowth school are indeed correct that continuous economic growth, even so-called green growth, is unsustainable on a finite planet. And they're also right that slowing down - producing less, foregoing producing goods and services we don't really need - opens up the prospect of greater freedom, a better life. The French, naturally, put it best:

*The recipe for de-growth lies in doing more, and doing better, with less. ... Far from necessarily implying such sacrifices, the ecological conversion of our societies holds out the promise of more joie de vivre, and for today, rather than for tomorrow: healthier food, more leisure time and more conviviality.*¹¹

But Daly, Jackson and the rest are mistaken to assume that we can get a sustainable "steady state" economy or "de-grow" the economy "within a capitalist framework." I contend first, that the idea of a steady-state or de-growing capitalism is based on spectacularly untenable assumptions, starting with the assumption that growth is optional rather than built into capitalism. I argue that irresistible and relentless pressures for growth are functions of the day-to-day requirements of capitalist reproduction in a competitive market, incumbent upon all but a few businesses, and that such pressures would prevail in any conceivable capitalism.

Secondly, this paper takes issue with Daly's thesis, which also underpins his SSE model, that capitalist efficiency and resource allocation is the best humanity can come up with. I argue that this belief is incompatible with an ecological economy, and therefore it undermines Daly's own environmental goals. I conclude that because capitalist growth cannot be stopped, or even slowed, and because market-driven growth is driving us toward collapse, ecological economists would do well to abandon this distraction and get on with the project of developing a compelling and plausible vision of a post-capitalist eco-socialist economy and to join with eco-socialists to help organize for such a resolution before it's too late to bother trying.

I. THE END OF GROWTH?

Under the headline "Economic Growth Cannot Continue," the BBC on January 28, 2010, summarized a report issued by the New Economics Foundation (NEF) that asserted that "continuing economic growth is not possible if nations are to tackle climate change." The NEF said that "unprecedented and probably impossible" carbon reductions would be needed to hold temperature rises below 2 degrees Celsius (3.6 degrees Fahrenheit) without which we face catastrophic global warming. "We urgently need to change our economy to live within its environmental budget," said NEF's policy director, Andrew Simms, adding that "there is no global, environmental central bank to bail us out if we become ecologically bankrupt."¹² In *Growth Isn't Possible*, Simms and co-author Victoria Johnson reviewed all existing proposed models for dealing with climate change and energy use including renewable, carbon capture and storage, nuclear - and even geo-engineering - and concluded that these are "potentially dangerous distractions from more human-scale solutions" and that there are "no magic bullets" to save us. The report concluded that even if we were to rapidly transition to an entirely clean energy-based economy, this

would not suffice to save us because: "Globally, we are consuming nature's services - using resources and creating carbon emissions - 44 percent faster than nature can regenerate and reabsorb what we consume and the waste we produce. In other words ... if the whole world wished to consume at the same rate it would require 3.4 planets like Earth." Given these facts and trends, Simms and Johnson argued, we have no choice but to bring average global growth to a halt (with sharp reductions in growth in the industrialized countries balanced by accelerated growth in the low-income countries to approximate equity but toward stasis on balance) and to radically reconstruct the global economy to conform to "environmental thresholds, which include biodiversity and the finite availability of natural resources." The authors concluded that "a new macro economic model is needed, one that allows the human population as a whole to thrive without having to rely on ultimately impossible, endless increases in consumption" and they pointed to Herman Daly's idea of a Steady-State Economy as their model. For a reaction to this report, the BBC asked Tom Clougherty, executive director of the Adam Smith Institute, a free-market think tank, for his response. Clougherty remarked that the NEF's report exhibited "a complete lack of understanding of economics."¹³

The NEF report came on the heels of a book published in December 2009 by Tim Jackson, economics commissioner on the Sustainable Development Commission, the UK government's independent adviser on sustainable development. In his book *Prosperity Without Growth*, Jackson argues that our ever-increasing consumption adds little to human happiness, even impedes it, and is destroying our children's future. Jackson calls for a new vision of "prosperity without growth" and, like the NEF, points to Daly's Steady-State Economy as the best model.¹⁴

Now there is no doubt that the NEF is right that if CO₂ emissions continue to climb, catastrophic global warming will result. The NEF is also right that if there are no magic technofixes available in the foreseeable future, the only way to stop global warming before it exceeds 2 degrees Celsius would be to put the brakes on growth. But Tom Clougherty still had a point: Pro-market, but anti-growth economists don't understand capitalist economics. In rejecting the notion of a no-growth capitalism, Clougherty was just reaffirming the orthodox view of economists across the spectrum from Adam Smith to Karl Marx that growth is an iron law of capitalist development, that capitalism cannot exist without constant revolutionizing of productive forces, without constantly expanding markets, without ever-growing consumption of resources.¹⁵ Indeed, it was precisely this market-propelled "motor" of economic development that for Karl Marx so sharply distinguished the capitalist mode of production from all previous historical modes of production like slavery or feudalism that contained no such in-built motor of development and so suffered repeatedly from stagnation, crises of underproduction, famine and collapse.¹⁶ But of course, the Adam Smith Institute believes that this endless growth and ever-rising consumption is a good thing.

II. WHY DO CAPITALIST ECONOMIES GROW?

Simms and Johnson begin by asking, "Why do economies grow?" Their answer is that as a society we're "addicted" to growth.¹⁷ Bill McKibben, in his forward to Tim Jackson's book calls growth a "spell": "For a couple of hundred years, economic growth really was enchanting." But "the endless growth of material economies" threatens the underpinnings of our civilization. The "spell" can be broken, and it is past time we did it.¹⁸ Jackson says we can find a sustainable prosperity if we abandon the growth-obsessed, resource-intensive, consumer economy, forget "keeping up with the Joneses," and "live more meaningful lives" by "downshifting" to consume less, find "meaningful work" and "revitalize the notion of public goods." "People can flourish without more stuff" he says.¹⁹ For Jackson, Simms and Johnson as for Daly, growth is seen to be entirely subjective, optional, not built into capitalist economies. So it can be dispensed with, exorcised, and capitalism can carry on in something like "stasis." So Tim Jackson tells us that in his vision of a "flourishing capitalism" the market would operate at a less frantic pace:

*Ecological investment calls up a different 'investment ecology.' Capital productivity will probably fall. Returns will be lower and delivered over longer timeframes. Though vital for ecological integrity, some investments may not generate returns in conventional monetary terms. Profitability - in the traditional sense - will be diminished. In a growth-based economy, this is deeply problematic. For an economy concerned with flourishing it needn't matter at all.*²⁰

Reading this, it's not hard to see why mainstream economists find the idea of a slow growth, let alone a no-growth capitalism, hard to take seriously. For a start, under capitalism, this would just be a recipe for mass unemployment, among many other problems. Back in the Clinton boom years, Paul Krugman, writing in *The New York Times*, wondered "if there isn't something a bit manic about the pace of getting and - especially - spending in *fin-de-siecle* America":

*But there is one very powerful argument that can be made on behalf of recent American consumerism: not that it is good for consumers, but that it has been good for producers. You see, spending may not produce happiness, but it does create jobs, and unemployment is very effective at creating misery. Better to have manic consumers American style, than depressive consumers of Japan. ... There is a strong element of rat race in America's consumer-led boom, but those rats racing in their cages are what keeps the wheels of commerce turning. And while it will be a shame if Americans continue to compete over who can own the most toys, the worst thing of all would be if the competition comes to a sudden halt.*²¹

But then Paul Krugman is an economist. Ecological economists like to quote Kenneth Boulding, who famously declared that "anyone who believes exponential growth can go on forever in a finite world is either a madman or an economist." Boulding, Daly and their students say that economists like Krugman are living in denial if they think that growth can go on forever in a finite world. But Krugman and the mainstream could just as easily reply that Boulding and Daly are themselves living in denial if they think that capitalism can carry on without growing.

In what follows, I will argue that Herman Daly, Tim Jackson, Andrew Simms and the rest of the anti-growth school of ecological economists are right that we need a new macro economic model that allows us to thrive without endless consumption. But they are mistaken to think that this can be a capitalist economic model. I will try to show why ecologically suicidal growth is built into the nature of any conceivable capitalism. This means, I contend, that the project of a steady-state capitalism is impossible and a distraction from what I think ought to be the highest priority for ecological economists today - to develop a broad conversation about what the lineaments of a post-capitalist ecological economy could look like. I'm going to start by stating three theses that I take to be fundamental principles and rules for reproduction that define any capitalism and shape the dynamics of capitalist economic development.

1. Producers are dependent upon the market: Capitalism is a mode of production in which specialized producers (corporations, companies, manufacturers, individual producers) produce some commodity for market but do not produce their own means of subsistence. Workers own no means of production, or insufficient means to enter into production on their own, and so have no choice but to sell their labor to the capitalists. Capitalists as a class possess a monopoly ownership of most of society's means of production, but do not directly produce their own means of subsistence. So capitalists have to sell their commodities on the market to obtain money for their own means of subsistence and to purchase new means of production and hire more labor, to re-enter production and carry on from year to year. So in a capitalist economy, everyone is - first and foremost - dependent upon the market, compelled to sell in order to buy, to buy in order to sell, to re-enter production and carry on.

2. Competition is the motor of economic development: When producers come to market, they're not free to sell their particular commodity at whatever price they wish because they find other producers selling the same commodity. They therefore have to "meet or beat" the competition to sell their product and stay in business. Competition thus forces producers to reinvest much of their profits back into productivity-enhancing technologies and processes (instead of spending it on conspicuous consumption or warfare without developing the forces of production as ruling classes did, for example, under feudalism): Producers must constantly strive to increase the efficiency of their units of production by cutting the cost of inputs, seeking ever-cheaper sources of raw materials and labor, by bringing in more advanced labor-saving machinery and technology to boost productivity, or by increasing their scale of production to take advantage of economies of scale, and in other ways, to develop the forces of production.

3. "Grow or die" is a law of survival in the marketplace: In the capitalist mode of production, most producers (there

are some exceptions, which I will note below) have no choice but to live by the capitalist maxim "grow or die." First, as Adam Smith noted, the division of labor raises productivity and output, compelling producers to find more markets for this growing output. Secondly, competition compels producers to seek to expand their market share, to defend their position against competitors. Bigger is safer because, *ceteris paribus*, bigger producers can take advantage of economies of scale and use their greater resources to invest in technological development to more effectively dominate markets. Marginal competitors tend to be crushed or bought out by larger firms (Chrysler, Volvo, etc.). Thirdly, the modern corporate form of ownership adds irresistible and unrelenting pressures to grow from owners (shareholders). In the corporate form, CEOs do not have the freedom to choose not to grow or to subordinate profit-making to ecological concerns, because they don't own their firms even if they own substantial shares. Corporations are owned by masses of shareholders. And the shareholders are not looking for "stasis"; they are looking to maximize portfolio gains, so they drive their CEOs forward.

In short, I maintain that the growth imperative is a virtual a law of nature, built into any conceivable capitalism. Corporations have no choice but to seek to grow. It is not "subjective." It is not just an "obsession" or a "spell." And it cannot be exorcised. Further, I maintain that these theses are uncontroversial, even completely obvious to mainstream economists across the ideological spectrum from Milton Friedman to Paul Krugman. But Herman Daly, Tim Jackson and the rest of the pro-market anti-growth school of ecological economists must deny these elementary capitalist rules for reproduction because their project for a "steady-state" eco-capitalism rests on the assumption that capitalist economic fundamentals are not immutable, that growth is "optional" and thus dispensable.

III. CAPITALISM WITHOUT GROWTH?

In the 1970s and '80s, Herman Daly launched a broadside assault on the academic discipline of economics, assailing its dogmatic and neo-totalitarian embrace of neoclassical economics and its willful blindness to our looming environmental crisis. In pathbreaking and widely influential books and articles, Daly assailed the "stupor of economic discourse" by holding up to his colleagues what he called the "wild facts" of our ecological crisis: the growing hole in the ozone shield, the alarming evidence of rising CO₂ levels, the shocking rates of natural resource consumption, the frightening rates of extinction and loss of biodiversity and so on which mainstream economists ignored (and most continue to ignore to this day). The ecological crisis is caused, Daly argued, by too much growth: "the scale of human activity relative to the biosphere has grown too large" and most especially, by ever-growing consumption in the advanced industrialized countries. Daly attacked the mainstream's "idolatrous" "religion of growth," its "growthmania," its "fetish" of limitless consumption.²² Daly's critique of the neoclassical defense of growth is probably the most devastating critique to come from within the profession.

But despite his "radical" break with the mainstream's fetish of growth, Daly did not at all break with his colleagues' fetish of the market organization of production, the capitalist market economy. On the contrary. His proposal for a Steady-State Economy was based, he said, "on impeccably respectable premises: private property, the free market, opposition to welfare bureaucracies and centralized control."²³ So in his steady-state model, Daly embraces capitalism, but he rejects the consequences of market-driven economic development, especially overconsumption and environmental destruction. Now one might reasonably ask, how can he have it both ways? Daly tries to get around this contradiction by abstracting from the day-to-day workings of capitalism, from the demands on corporate CEOs by shareholders, from the pressures of market competition, and so on, and talks instead about the economy at a highly abstract meta level. So Daly says that if we are not to overdrive our ecology, there must be a "macro, social decision" about limiting the scale of growth."²⁴ He says that "In my view," the industrialized countries, must "attain sustainability in the sense of a level of resource use that is both sufficient for a good life for its population and within the carrying capacity of the environment if generalized to the whole world. Population growth and production growth must not push us beyond the sustainable environmental capacities of resource regeneration and waste absorption. Therefore, once that point is reached, production and reproduction should be for replacement only. Physical growth should cease, while qualitative improvement continues."²⁵

But how could there ever be a capitalist economy that does not grow quantitatively?²⁶ Capitalist economies are, as noted above, made up of individual producers, businesses and corporations, producing in competition with one another for sales on the market. Of course there are some, typically small, privately owned businesses or niche

industries - farms, restaurants, mom-and-pop stores, landlords, as well as larger sole ownerships, partnerships, and family owned businesses that can, if they so choose, carry on producing and marketing roughly the same level of output year-in year-out so long as they don't face immediate competition - because such businesses do not have to answer to anyone else. Regulated public utilities make up another category of enterprises that also largely can escape competitive pressures to grow because their sales are guaranteed and profits are set in advance. But most of the economy is made up of large "publicly held" corporations owned by investor-shareholders. Shareholders, even shareholders who are environmentally minded professors investing via their TIAA-CREF accounts, are constantly seeking to maximize returns on investment. So they sensibly look to invest where they can make the highest return. This means that corporate CEOs do not have the freedom to choose to produce as much or little as they like, to make the same profits this year as last year. Instead, they face relentless pressure to maximize profits, to make more profits this year than last year (or even last quarter), therefore to maximize sales, therefore to grow quantitatively. So automakers, for example, look to make a profit from every car they sell. They can do this either by increasing the rate of profit on each car they sell by intensifying production - finding cheaper material inputs, cutting wages to lower labor costs or bringing in more efficient labor-saving technology. But they can't increase profits forever in this way. Competitors can find the same cheap inputs, the same new technology. And they can't lower wages below subsistence. So this avenue has limits. Or, they can try to maximize profits extensively - by selling more cars. In practice, of course, automakers do both - but increasing sales is normally the main avenue of profit maximization because, as Adam Smith noted, returns are theoretically limited only by the extent of the market. So facing saturated markets at home, US car makers look to Asia. The same goes for any other investor-owned corporation. They're all locked into the same competitive system. In the real world, therefore, few corporations can resist the relentless pressure to "grow sales," "grow the company," "expand market share"- to grow quantitatively. The corporation that fails to outdo its past performance risks falling share value, stockholder flight or worse. Starbucks can't quench its investors' thirst for profit with just coffee, even overpriced coffee, so its barristas push frappuccinos, mochaccinos, skinny cinnamon dolce lattes, CDs, movies - whatever it takes to keep profits rising. So Apple can't afford to take a breather after last year's huge success with its iPhone. Shareholders demand something new this year to propel stocks to new highs - *et voilà*: the iPad (whether you need it or not). Seen in this light, "growthmania" is hardly just a dogma, an ideology, a fetish. "Growthmania" is a rational and succinct expression of the day-to-day requirements of capitalist reproduction everywhere and in any conceivable capitalism.

And if economic pressures weren't sufficient to shape CEO behavior, CEOs are, in addition, legally obligated to maximize profits - and nothing else. So when carrying out research for his book *The Corporation*, Canadian law professor Joel Bakan interviewed Milton Friedman on the subject of the "social responsibility" and the responsibilities of executives. Friedman, channeling Adam Smith, told him that corporations are good for society but corporations should not try to do good for society. Bakan summed up this discussion thusly: "Corporations are created by law and imbued with purpose by law. Law dictates what their directors and managers can do, what they cannot do and what they must do. And, at least in the United States and other industrialized countries, the corporation, as created by law, most closely resembles Milton Friedman's ideal model of the institution: It compels executives to prioritize the interests of their companies and shareholders above all others and forbids them from being socially responsible - at least genuinely so."²⁷ In short, given unrelenting economic pressures and severe legal constraints, how could corporations adopt "stasis" as their maxim?

Why Would Anyone Want a Steady-State Capitalism?

Of course there are times when capitalist economies do slow down grind along in a sort of stasis - but that's even worse. Since the fall of 2008, when the world economy suddenly ground to a halt, we've been treated to a preview of what a no-growth "stasis" economy would look like under capitalism. It's not a pretty sight: capital destruction, mass unemployment, devastated communities, growing poverty, foreclosures, homelessness and environmental considerations shunted aside in the all-out effort to restore growth. That is "stasis" under capitalism. In one of his books, Daly wrote with some exasperation, "must we [grow] beyond the optimum, just to keep up the momentum of growth for the sake of avoiding unemployment?"²⁸ Well, yes actually, because under capitalism workers don't have job security like tenured professors. This fact may partially explain why it is that, despite all the anti-growth books published since the 1970s, there is no public support out there for a capitalist steady-state economy. And why should there be? Why would anyone want a steady-state capitalist economy? Poll after poll shows that ordinary citizens want to see the environment cleaned up, want to see a stop to the pillage of the planet, the threat

of destruction of their children's future. But as workers in a capitalist economy, "no growth" just means no jobs. If limits to growth are imposed, and some industries have to cut back, where would laid-off workers find re-employment? And if corporations and the economy do not continuously grow, where would the jobs come from for the workers' children? Today, in the United States, there are said to be at least seven applicants for every available job. Where are those other six people going to find jobs if there is no growth? And this situation is far worse in the developing world, where unemployment levels are off the charts. So throughout the world, given capitalism, the only hope for workers is more growth. As a 2009 headline in *The Onion* ran: "Masses clamor for new bubble."

IV. LIMITING 'SCALE'?

Daly says, quite rightly, that we need to reduce growth and consumption to save the humans. The way to do this, he says, is to limit the scale of "resource throughput." But what is "throughput?" Throughput, he tells us "is the flow beginning with raw materials inputs, followed by their conversion into commodities and finally into waste outputs"²⁹ OK, but which resources and commodities? Do we need to limit production of meat, coal, oil, synthetic chemicals? How about Starbucks' Frappacinos, or SUVs, Flat screen TVs? Ikea kitchens, Caribbean vacations, 12,000-square-foot homes? Daly doesn't tell us. He doesn't think it's necessary to specify cuts in resource use or consumption because he believes the market is the best mechanism to make these micro decisions: "Once the level of resource throughput is reduced to a sustainable level, the pattern of consumption will automatically adapt, thanks to the market. Let the market determine efficient allocation."³⁰ Daly does see a role for government - to make the macro-decisions. He says that the government or "some democratically elected body" should set "controls" or "quotas" on consumption of particular resources. And the quotas, he says, "must be low enough to prevent excessive pollution and ecological costs that fall on the present as on the future."³¹ But how could this work under capitalism?

First of all, those quotas would have to be awfully low for some industries like, say, fishing, tropical logging, even lower for the most polluting industries like coal, and virtually zero for many chemicals - if we seriously want to protect present and future human generations, not to mention other species. But how could any capitalist government deliberately reduce overall consumption to a "sustainable level" or impose steep cuts on particular industries? Reducing consumption means reducing production. And under capitalism, as we just noted, that just means recession, unemployment, falling revenues or worse. So right now, no capitalist government on the planet is looking to do anything but restore and accelerate growth. That's why Congress killed the cap-and-trade bill, weak as it was. That's why at Copenhagen, no capitalist government was willing to sacrifice growth to save the environment.³² But even during the recent long economic boom, no government would accept binding limits on emissions. So Copenhagen is only the latest in a long sorry string of failures: Bali, Nairobi, Rio, and all the way back to Kyoto in 1997. It would appear, therefore, that the chances of any capitalist government "reducing consumption to sustainable levels" are nonexistent.

Secondly, the ecological crisis we face is not only caused by the overall scale of production and consumption, it is just as much caused by the specific irrational, inefficient, wasteful, and destructive nature of the capitalist market's "allocation of resources" - and equally, the by market's failure to allocate resources to things we do need. The problem is what we produce, what we consume, what we dump, what we destroy. So for example, Hansen says "coal emissions must be phased out as rapidly as possible or global climate disasters will be a dead certainty." "My argument is that new coal-fired power plants must be stopped as a first step toward phasing out coal emissions" and phasing out our dependence on all fossil fuels: "Yes, most of the fossil fuels must be left in the ground. That is the explicit message that the science provides."³³ If we don't, we won't be able to contain global warming to within 2 degrees Celsius, and if we fail to do that, our goose is cooked."

After global warming, global pollution, especially toxic chemical pollution, is probably the next-greatest environmental threat we face. Scientists since Rachel Carson have warned that human survival, and the survival of many other species, is increasingly at risk because of the growing assault on our bodies and the environment from the tens of thousands of different kinds of toxic chemicals pumped, dumped, leached, sprayed, vented into the environment every year by the chemical industry, polluting factories and farms, power plants and so forth.³⁴ Except for lead, PCBs, DDT and a few substances that have been banned or partially banned, toxic chemical pollution of all kinds has worsened dramatically in recent decades, all over the world - especially because of the flood of new synthetic chemicals in pesticides, plastics, fabrics, pharmaceuticals, cleaners, cosmetics, etc. - thus

into our food, water and the air we breathe. The average American apple or strawberry is laced with pesticides, some of which did not exist in Rachael Carson's day.³⁵ America's favorite seafood, shrimp, "is a health and environmental nightmare."³⁶ Chemicals used in rocket fuel and dry cleaning turn up regularly in baby formula.³⁷ In the United States, the increasing contamination of public water supplies all over the country has become a scandal and raised alarm.³⁸ Everywhere we turn, we're exposed to more and more toxins.³⁹ Today, some 80,000 chemicals are in use in the United States, barely 200 of which have even been tested for toxicity to humans and only a handful actually banned. They're in our homes.⁴⁰ They're in our bodies.⁴¹ And many are known to cause or are associated with birth defects, cancers, chronic illnesses and physical disorders, neurological disorders in children, hyperactivity and deficits in attention, developmental and reproductive problems in humans and animals - and these are on the rise around the world.

Given that we can't anticipate all the potential risks of new synthetic chemicals and given the scale of the problem when hundreds of new chemicals are introduced every year and many released into the environment in huge quantities - even millions of pounds - scientists like Theo Colburn and her colleagues argue that "humans as a global community" need to reconsider the convenience of endocrine-disrupting plastics, pesticides and other products, "against the risk they entail" and consider a drastic reduction or even a phase-out:

Phasing out hormone-disrupting chemicals should be just be the first step, in our view. We must then move to slow down the larger experiment with synthetic chemicals. This means first curtailing the introduction of thousands of new synthetic chemicals each year. It also means reducing the use of pesticides as much as possible. ... They confront us with the unavoidable question of whether to stop manufacturing and releasing synthetic chemicals altogether. There is no glib answer, no pat recommendation to offer. The time has come, however, to pause and finally ask the ethical questions that have been overlooked in the headlong rush of the twentieth century. Is it right to change Earth's atmosphere? Is it right to alter the chemical environment in the womb of every unborn child. It is imperative that humans as a global community give serious consideration to this question and begin a broad discussion that reaches far beyond the usual participants?⁴²

Our best scientists are telling us that to save the humans, for a start, we need to virtually shut down the coal industry, drastically reduce production of fossil fuels and phase out many toxic chemicals as quickly as possible. But, how can we do this under capitalism? Peabody Coal, Chevron Oil, Monsanto - these are huge companies that have sunk all their capital and trained thousands of skilled personnel to produce what they produce. Rich as they are, they can't just write all that off and start over. So how can they accept quotas that would force them to drastically reduce production, depress profits or even close down? How could they do this and be responsible to their shareholders? As Milton Friedman said, "corporations are in business to make money, not save the world." Yet if corporations carry on with business as usual, we're doomed. So what to do?

If we're going to save the world, I would suggest that humanity is going to have to begin that "broad discussion" Theo Colborn proposed, with people across the whole of society to figure out how to redesign the economy. This could be the starting point of an ecological economic democracy. For my part, I would suggest that an agenda for that discussion ought to include at least the following points:

- 1) We're going to have to find ways to put the brakes on out-of-control growth, even if it means drastically retrenching or shutting down coal companies, oil companies, chemical companies, auto companies, even whole economic sectors dedicated 100 percent to waste production like the disposable products industries.
- 2) We're going to have to radically restructure production to impose sharp limits on the production, use and consumption of all sorts of specific resources like coal, oil, gas, lumber, fish, oil, water, minerals, toxic chemicals, and many products made from them. Some products, like coal-fired power plants, toxic pesticides, diesel fuel, bottled water probably should be banned altogether.
- 3) At the same time, we're going to have to sharply increase investments in things society does need, like renewable energy, organic farming, public transit, public water systems, public health, quality schools for our children and many other currently underfunded social and environmental needs.

4) We're going to have to do away with production that is geared to needless repetitive consumption and the industries that support them. Too many choices and too short a lifespan for products have socially and environmentally unbearable costs. We live on a small planet with limited resources. Others need those resources too, so we can't afford waste.

5) If we have to shut down polluting or wasteful industries, society is going to have to provide equivalent jobs, not just retraining or the unemployment line, for those displaced workers because, if we don't, there will be no social support for the drastic changes we need to make to ensure our survival.

Now all this might sound like Daly's hobgoblin of economic "planning" and indeed such a democratic economy would be incompatible with capitalism, but what other choice do we have given that rational capitalist corporations can't save the humans?

Of course, the minute we start talking about shutting down the coal industry or pesticide producers, or forcing them to change, and directing resources into new industries, then we're talking about violating capitalist freedom to produce and sell whatever they like, and consumer choice to buy whatever we want and can afford. We would be screwing up the market. That's right. But that is exactly what we have to do because the rational efficient market is very efficiently liquidating every resource on the planet and wiping us out in the process. If we want to save the humans and many other species, then we have to give up the freedom of capitalists to produce and sell as they please and consumers to buy whatever they like and can afford - to win the greater freedom for humanity to breathe clean air, to have safe water to drink, to have safe food to eat, to live long and healthy lives free of toxins-induced diseases, to restore a forested, clean, safe, habitable planet we can pass on to our children.

V. DALY'S MISPLACED FAITH IN THE MARKET

Daly rejects any such interference with market organization of production because, like his mainstream colleagues, he believes that "the market is the most efficient institution we have come up with" and the only option we have.⁴³ He can say this because he subscribes to a capitalist conception of efficiency. Capitalist economists since Adam Smith have defined economic efficiency from the standpoint of the production unit – the factory, mill, mine, etc. (which, conveniently, the capitalists own): So in capitalist terms, the most efficient production method, technology or economic system is the one that gets the most output from the least input, so produces the cheapest widgets and generates the most product/sales/wealth for a given investment of labor and raw materials. So Daly says the market "is wonderful for allocation." "Markets singlemindedly aim to serve allocative efficiency."⁴⁴ Since markets are such efficient allocators of resources, Daly believes that the role of the state should just be to "impose ... quantitative limits on aggregate throughput ... within which the market can safely function, and then the market is left alone."⁴⁵ But what exactly does this mean? Efficient for what end? Optimal for whom? And by leaving the corporations "alone" to maximize capitalist efficiency and optimality according to their interests, doesn't this just open the way to further social and environmental destruction and thus undermine Daly's social and environmental goals?

So if, for example, mountaintop removal is the most efficient method of getting the most coal out of the ground at the cheapest price (which, alas, it is), but this system is based on horrific environmental destruction - not unlike war - with exploding mountains, flooding, burying and devastating whole communities, towns and counties, poisoning water supplies, wrecking local economies throughout Appalachia and adding new health problems to already-burdened communities - while the very efficiency of production itself only serves to lower the cost of coal, promote increased coal combustion and thus accelerate global warming - what is so optimal and wonderful about this free-market allocation of resources? Who cares if mountaintop removal is the most "cost-efficient" allocation of resources if what it is producing is killing us?

If satellite-guided fishing trawlers, with nets the size of several football fields, are the most efficient means of maximizing the fish catch at the lowest possible price, but this strip-mining of the oceans has wiped out fishery after fishery, depleting many global fisheries to the point of extinction, even starving dolphins and seals, while wrecking the ocean bottoms, demolishing coral reefs and destroying deep-water ecologies – what is optimal about this market allocation of resources from the standpoint of humanity, nature and future generations of fish - and fish eaters?

If toxic chemical companies like Monsanto or Dupont manufacture Roundup or Benlate at the highest level of technical efficiency, in the cleanest factories, with the least waste going out the back door, what does this matter if the products they send out the front door and spray all over the planet are helping to extinguish life on Earth? What kind of lunatic efficiency and optimality is this?

If most of the American economy - from cars to appliances, from furniture to decoration, from fashion and cosmetics to throw away this and that and all their supporting industries and services like advertising, credit cards, packaging and on and on - is geared to insatiable repetitive consumption, to driving consumers to, as retailing analyst Victor Lebow described it back in the 1950s, "use up, wear out, burn up, and discard" perfectly good cars, TVs, clothes, phones and buy something "new" and "up to date" even if what they have already is perfectly useful, even if the new replacement is trivially different, in an endless, growing cycle of planned obsolescence and "forced consumption," what is optimal and efficient about all this - given the state of the world today?⁴⁶

Now, Daly would never want to see the sorts of awful, irrational, wasteful and destructive free-market resource allocations I've just described turn up in his Steady-State Economy. But aren't such corporate practices guaranteed to be there? Because - in Daly's model of a steady-state capitalism - the government's role is to set an upper limit on throughput consumption only and then get out of the way, leaving the market "alone" and in charge, why would the market act any differently than it does right now?

Social Efficiency Vs. Capitalist Efficiency

There is a place for efficiency in an ecological economy. After all, no one wants to waste labor or natural resources. But when, as under capitalism, the whole point of using resources efficiently is just to use the saved resources to produce even more commodities, to accelerate the conversion of even more natural resources into products - to be "used up, worn out, burned up, and discarded" so the cycle can begin all over again - capitalist efficiency turns into its opposite. In the 1860s, English economist William Jevons famously observed that gains in technological efficiency - specifically, the more economical use of coal in engines doing mechanical work - actually increased the overall consumption of coal, iron and other resources, rather than "saving" them, as many had hoped (because British officials were already growing concerned about running out of coal). As he wrote: "It is the very economy of its use which leads to its extensive consumption. ... [E]very ... improvement of the engine, when effected, does but accelerate anew the consumption of coal."⁴⁷ This "rebound" or "backfire" was not a function of technological improvement per se. Under different social arrangements, if profit were not the goal of production, then such gains in efficiency could indeed save these natural resources for the benefit of society and future generations. But Jevons lived, and we live, under capitalism, and, in this system, cheaper inputs give producers only greater incentive to "grow the market" by selling more product at lower prices to more consumers, and thus to push sales and profits still higher. So, ironically, the very capitalist efficiency and market organization of production that Daly celebrates just brings on the growth and further environmental destruction he so dreads.

But if we consider efficiency from the standpoint of society and ecology, including future as well as present generations, and including the needs of other species with which we share this precious blue planet, instead of just from the standpoint of the production unit, then the definition of socialist efficiency is completely opposite to market efficiency. So from a social-ecological perspective, it would be absurdly inefficient to waste resources producing goods and services we don't need, to produce goods designed to wear out or become obsolete as fast as possible just so we can do the same work all over again. Why would we want to do that? It would be so much more efficient and less wasteful to build cars, appliances, computers etc. to be as durable and long-lasting as possible, to need as few "model" changes as necessary, to be as upgradable and rebuildable as possible - and take longer vacations. From society's standpoint, it would be inefficient, even suicidal, to keep running coal-fired power plants that are killing us just because capital has been sunk into them. It would be far less costly to society and the environment, for society to collectively absorb the cost of phasing out and replacing these plants with renewable technologies we already have. From society's standpoint, it would be ruinous to contaminate the country's topsoil, pollute our public water supplies and poison ourselves with an endless array of toxic pesticides and other synthetic chemicals, just because capital is already sunk in those industries. If Monsanto can't afford to shut down its production of toxics, society could afford to close down those polluting plants and find other, better, employment for those talented and skilled but misallocated chemists and workers. And even if society decides that it needs some synthetic chemicals, to some extent, a "social" chemical policy would start from the Precautionary

Principle such as has already been elaborated by scientists, doctors and grass-roots anti-toxics organizations like Safer Chemicals Healthy Families, which calls for safer substitutes and solutions, a phase-out of persistent bioaccumulative or highly toxic chemicals, publication of full right-to-know and rights of workers and communities to participate in decisions on chemicals, publication of comprehensive safety data on all chemicals and insistence on the immediate priority protection of communities and workers in the event of any threat.⁴⁸ And so on.

VI. BEYOND CAPITALISM

Daly and the anti-growth school are right that we need to break out of the "iron cage of consumerism," "downshift" to a simpler life, find meaning and self-realization in promoting the common good instead of accumulating stuff. They call for an environmentally rational economy that conserves nature and resources for the benefit of our children and theirs instead of consuming the whole planet right now. And they call for a redistribution of wealth to those in need and for the construction of a society that is not centered on possessive individualism but is based on a decent material sufficiency for everyone on the planet together with a moral and spiritual transformation of our values away from materialism. These are admirable goals. But we can't do any of those things under capitalism, because under capitalism, we're all just rats racing in Paul Krugman's cages. We can't stop consuming more and more, because if we stop racing, we're all out of work. So it follows that we need a completely different kind of economic system, a non-capitalist economic system based on human needs, environmental needs and a completely different value system, not based on profit. Ecological economists from Herman Daly to Tim Jackson call for a "new macro-economic model" a "new vision," a "new paradigm," a "new central organizing principle." But all they actually offer us are unworkable, warm and fuzzy capitalist utopias, with no plausible means of escaping the iron cage of consumerism or the "growthmania" of the market. Jonathon Porritt says that "like it or not" we have to try to find sustainability within a "capitalist framework" and forget about alternatives. But if the engine of capitalist growth and consumption can't be stopped, or even throttled back, and if the logic of capitalist efficiency and capitalist rationality is killing us, what choice do we have but to rethink the theory? Like it or not Jonathon, it's time to abandon the fantasy of a steady-state capitalism, go back to the drawing boards and come up with a real "new macro-economic model," a practical, workable post-capitalist ecological economy, an economy by the people, for the people that is geared to production for need, not for profit. "Socialism"? "Economic democracy"? Call it what you like. But what other choice do we have? Either we save capitalism or we save ourselves. We can't save both.

¹ Tyndall Centre for Climate Research, [The Radical Reduction Conference: December 10-11, 2013, program](#), Page 5.

² Ibid.

³ The EU, for example, set a target of an 80 percent reduction below 1990 levels by 2050 (40 percent by 2030 and 60 percent by 2040). EU, "[Roadmap for moving to a low-carbon economy](#)," updated November 19, 2013.

⁴ In recent years, the EU has bragged that it is not only meeting its Kyoto targets but even "over-achieved" its first Kyoto target (2008-12) reducing emissions on average by 12.2 percent - beating its target of 5.2 percent "by a wide margin": EU, "EU-15 over-achieves first Kyoto target." But a recent study debunks this boast by pointing out that the Kyoto practice of charging emissions only to the country in which they are generated undeservedly credits gains in carbon reduction to Europe and the United States when, in fact, their cuts have been canceled out many times over by imports of their "outsourced" GHG emissions. So when, say, Norway-caught salmon are shipped to China for processing then shipped back to Norwegian supermarkets for sale to Norwegian consumers, it is misleading to charge the emissions from processing to China when they properly should be charged to Norway. Same with electronics, shoes, garments, furniture, everything that used to be produced in the United States and Europe, and is still consumed there, but is now assembled in East Asia, often with imported materials and components. So while developed countries claimed to have cut their collective emissions by 2 percent between 1990 and 2008 (still far short of their 5.2 percent target), when outsourced emissions are factored back in, the true change has been an increase of 7 percent. The United States, which initially promised a 7 percent cut under Kyoto (The United States signed but did not ratify the treaty), emissions within its borders increased by 17 percent in those 18 years, even without re-computation, and by 25 percent when outsourced emissions are factored back in.

See Glen P. Peters et al., "Growth in emission transfers via international trade 1990 to 2008," Proceedings of the National Academy of Sciences of the United States of America vol. 108 no. 21, March 29, 2011, pp. 8903-8908, well explained in plain language by Duncan Clark, "Carbon cuts by developed countries cancelled out by imported goods," *The Guardian*, April 25, 2011.

5 Damian Carrington, "Planet likely to warm by 4C by 2100, scientists warn," *The Guardian*, December 31, 2013, citing a study in the January 2, 2014 issue of *Nature* by Steven C. Sherwood et al. Quoting Sherwood: "4C would likely be catastrophic rather than simply dangerous. For example, it would make life difficult, if not impossible, in much of the tropics, and would guarantee the eventual melting of the Greenland ice sheet and some of the Antarctic ice sheet [with sea levels rising by many meters as a result]."

6 Eg. James Glanz, "Power, pollution and the internet," *The New York Times*, September 22, 2012. Worldwide, the *Times* reports, digital storehouses use about 30 billion watts of electricity, roughly equivalent to the output of about 30 nuclear reactors. And that's before the NSA's ginormous billion-dollar-plus Stasi espionage data center in Bluffdale, Utah, opens for business. That will consume a large part of Utah's electricity, enough to power tens of thousands of homes, at a cost of more than \$1 million per month of taxpayers' money.

7 New Economic Foundation, [Growth Isn't Possible](#), January 25, 2010 (London NEF, 2010). Tim Jackson, *Prosperity Without Growth* (London: Earthscan, 2009). Serge Latouche, *Farewell to Growth* (Malden MA: Polity Press, 2009) and other works.

8 Eg. Hawken, *Ecological Commerce* (New York: HarperCollins, 1993) p. 11-13.

9 *Capitalism as if the World Mattered* (London: Earthscan, 2005), Page 84.

10 "[Green capitalism: the god that failed](#)," Real-World Economics Review, No. 56 (March 2011), pp. 112-144.

11 Serge Latouche, op cit. Page 56.

12 New Economic Foundation, [Growth Isn't Possible](#), January 25, 2010 (London NEF, 2010).

13 "[Economic growth 'cannot continue'](#)," BBCnews Online, January 25, 2010.

14 Tim Jackson, *Prosperity Without Growth* (London: Earthscan, 2009).

15 Smith's theorization of growth was rudimentary but clear. He believed that "division of labor is limited by the extent of the market." As division of labor increases output and sales (increases "the extent of the market"), this induces the possibility of further division and labor and thus further growth. Thus, Smith argued, growth was self-reinforcing as it exhibited increasing returns to scale. Adam Smith, *The Wealth of Nations* (various edns.), chapters 1 and 3.

16 For a more detailed discussion of Smith and Marx on these points, see my "The eco-suicidal economics of Adam Smith," *Capitalism Nature Socialism* 18.2 9 (June 2007) pp. 22-43.

17 *Growth Isn't Possible*, pp. 8-15.

18 *Prosperity Without Growth*, pp. xiii-xiv.

19 Ibid., pp. 132, 150-151, 171, 193.

20 Ibid., Page 197.

21 "Money can't buy happiness. Er, can it?" *The New York Times*, June 1, 1999 Op-Ed page.

22 *For the Common Good*, (Boston: Beacon, 1989), pp. 1-2; *Steady-State Economy* (Washington DC: Island Press, 1991), pp. 75, 100, 102, 103; *Beyond Growth* (Boston: Beacon 1996), pp. 10ff.

23 *Steady-State Economy*, pp. 2, 54, 190-91.

24 *Beyond Growth*, Page 16

25 *Beyond Growth*, pp. 3, 5.

26 When this article first appeared in *Real-World Economics Review* No. 53, Professor Daly wrote a reply in issue 54 insisting that he was talking about a “steady-state economy” not a steady-state capitalist economy. I rejoined in issue 55 and explained why, in my view, he could only be talking about a capitalist economy. I leave it to the interested reader to judge.

27 Joel Bakan, *The Corporation* (New York: Free Press, 2004) pp. 34-35.

28 *Steady-State Economy*, p. 101.

29 *Beyond Growth*, p. 28. Cf. *Steady-State Economy*, p. 36

30 *Beyond Growth*, p. 17.

31 *Steady-State Economy*, pp. 17, 53, 65.

32 See Jim Hansen’s discussion of both Copenhagen and the US climate bill in *Storms of My Grandchildren* (Bloomsbury, 2009), chapter 9.

33 *Storms of My Grandchildren*, pp. 172, 178-9, and 236.

34 Rachel Carson, *Silent Spring* (New York: Houghton Mifflin, 1962). Theo Colborn et al. *Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival?* (New York: Dutton, 1996).

35 Environmental Working Group, “[A few bad apples: pesticides in your produce](#),” April 2000.

36 Taras Grescoe, *Bottomfeeder: How to Eat Ethically in a World of Vanishing Seafood* (New York: Bloomsbury, 2008).

37 Environmental Working Group (EWG) news release: “[CDC: Rocket fuel chemical in most powdered infant formula](#),” April 1, 2009.

38 On the state of America’s waters, see *The New York Times* series Toxics Waters by Charles Duhigg: “Clean water laws neglected, at a cost,” September 13, 2009; “Debating just how much weed killer is safe in your water glass,” August 23, 2009; “Health ills abound as farm runoff fouls wells,” September 18, 2009; “Sewers at capacity, waste poisons waterways,” November 23, 2009; “Millions in US drink dirty water, records say,” December 8, 2009; “That tap water is legal but may be unhealthy,” December 17, 2009.

39 Leslie Wayne, “Fight grows over labels on household cleaners,” *The New York Times*, September 17, 2009. Anjali Athavaley, “Kicking formaldehyde out of bed,” *The Wall Street Journal*, October 23, 2009. Joseph Pereira, “Protests spur stores to seek substitutes for vinyl in toys,” *The Wall Street Journal*, February 12, 2008.

40 Leslie Kaufman and Gardiner Harris, “Environmental group reveals toxic chemicals in a range of consumer items,” *The New York Times*, September 17, 2009.

41 Andrew C. Revkin, “Broad study finds lower level of old chemicals, but new trends are called worrying,” *The New York Times*, February 1, 2003. Anila Jacob, MD, et al. [The Chemical Body Burden of Environmental Justice Leaders](#) (Environmental Working Group, May 2009). Erika Schreder, [Earliest Exposures](#) (Washington Toxics Coalition, November 2009). Bobbi Chase Wilding, Kathy Curtis, Kristen Welker-Hood, [Hazardous Chemicals in Health Care: a Snapshot of Chemicals in Doctors and Nurses](#) (Physicians for Social Responsibility, 2009).

42 *Our Stolen Future*, p. 246-47.

43 *Steady-State Economy*, Page 51. *For the Common Good*, pp. 14, 19, 44-47; and *Beyond Growth*, pp. 13-14, 17.

44 *Beyond Growth*, pp. 13, 32. Daly quoted in Porritt, op. cit., p. 78; *For The Common Good*, p. 44-49.

[45](#) *Steady-State Economics*, pp. 88-89.

[46](#) The quoted phrases Victor Lebow cited were by Vance Packard in *The Waste Makers* (New York: David McKay, 1960) pp. 24,33.

[47](#) William Stanley Jevons, *The Coal Question*, third edition (New York: Kelley, 1905) pp. 140-41, 152-53, cited in Blake Alcott, "Jevon's paradox," *Journal of Ecological Economics*, 54 (2005) p. 12.

[48](#) See the [Louisville Charter and its background papers](#).