Encyclopedia of Earth

Herman Daly Festschrift: Ecological and Georgist Economic Principles: A Comparison

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There are today a large number of schools of thought in economics that take as their starting point a critique of neoclassical economics. Yet, in their critique of the dominant mode of economic analysis, they do it homage.[1] They are like students arguing with the master, whom they acknowledge by their disputes.

The two-factor, highly formalized models that characterize neoclassical thought will be moved from the center to the periphery of economics only if the proponents of diverse schools of criticism begin studying each other's thought and building alternative paradigms that are as comprehensive as the one they seek to replace.

This essay attempts to draw some connections between the principles of ecological economics and Georgist economics (named after Henry George). In order to engage in this dialogue, I will adopt a rather stylized view of both perspectives. My hope is not to offer a thorough explication of their differences and similarities, but merely to begin a process of looking for questions on which dialogue might be fruitful.

The Nature of Land

One feature that characterizes both Georgist and ecological economics is the centrality of land in all aspects of theory. When neoclassical economists claim that land has been of diminishing importance in the industrial era and the "information age," Georgists and ecological economists agree that what Herman Daly has called "angel economics" is a dangerous and misguided fantasy. Nevertheless, in their understanding of the nature of land, these two strands of heterodox economics are poles apart.

Ecological economics considers land in bio-physical terms and in its particularity as complex ecological processes occurring at specific sites. It views land as both a resource for human use and as a life-sustaining matrix. The key issue for ecological economics is defining the scale of human activity that will disrupt that matrix. Thus, when ecological economists examine the role of land in urban life or farming or forestry, they think largely in terms of the conflict between human activity and natural processes.

Historically, Georgist economics has treated nature purely as resource. When Henry George wrote in the late 19th century, before widespread understanding of the second law of thermodynamics, he adopted the view that the earth could sustain one hundred billion people and a nearly infinite amount of physical transformation of the earth. Thus, Georgism began as an anthropocentric worldview. In Georgist economics, the central issue has been the liberal hope of human freedom, a world in which no human is allowed to dominate another. Land is important primarily as an intermediary in the struggle of humans for power and secondarily as the storehouse of potential wealth for humanity. The value of land (all of nature) is not derived from its physical characteristics, but rather as location relative to economic activity. This is not so different from the neoclassical view of land or space. The main difference is that Georgist economics takes that value seriously and reorients the entire framework of thinking by doing so.

Both perspectives (the ecological view of land as matrix of life and the Georgist view of land as matrix of human

interactions) are neglected in neo-classical economics, which assumes that labor and capital work together in a kind of mathematical ether. Thus, while it would be possible to belabor the differences between the ecological and Georgist views of land, it is far more useful to note that both are relevant to solving the massive problems created by neoclassical theories that ignore both of them.

Both approaches risk becoming one-sided. The ecological approach to land risks becoming a purely physicalist approach (treating ecological complexity or negentropy as the only value worth considering), whereas the Georgist approach risks losing sight of the necessity of limiting human encroachment on fragile ecosystems, including the earth's climate. Thus, each needs the other to achieve balance.

Growth and the Environment

One topic on which balance is urgently called for is the assessment of benefits and costs of economic growth or increased scale. Georgists and ecological economists agree that growth creates severe problems, but they do not agree on what those problems are. For Georgists, economic growth has the positive effect of producing more goods and services and the negative effect of increasing pollution and inequality. The latter problems can be corrected, however, so Georgists favor a growing economy. By contrast, ecological economists regard increased scale of human activity as the primary culprit behind environmentally damaging activity and support a steady-state economy without growth of materials and energy consumption, but with increases in services and the quality of goods.

An appropriate balance of Georgist and ecological economics on the subject of growth is not some point along a continuum between high growth and zero growth. Instead, it requires taking account of the concerns of both traditions. In this section, the focus will be on the environment. In a later section, the problems of inequality will be addressed.

An intelligent approach to growth involves 1) distinguishing between the benign and harmful elements of growth and 2) designing policies based on those distinctions. Analyzing the elements of growth entails moving away from highly stylized views that lump diverse activities into single categories, such as IPAT (Impact = Population x Affluence [income/capita] x Technology) or ultimate bio-physical limits on human activity. A crucial question that remains unresolved is the extent to which economic growth necessarily entails a higher volume of physical resource consumption, pollution, and waste. Technically speaking, economic growth is an accounting device that records changes in the volume of human exchanges and interactions. Its impacts depend very much on the ratio of value produced per unit of energy consumed and on the institutional framework within which human interactions occur, particularly institutions related to property rights and the provision of public goods.

There are some environmental issues on which the problem of scale (the result of growth) appears to be almost the only factor worth considering. These are the sorts of issues that lend credence to the very generalized critiques of growth that have been made by ecological economists. For example, economic growth has historically entailed greater energy consumption, almost any source of which has some damaging effects. Except in the unusual case of Switzerland and Germany, which have achieved zero or negative energy-GDP elasticity,[2] respectively, most nations increase their energy consumption as their GDP rises.[3] But the relationship is not fixed. In OECD countries, energy elasticity ranged between 0.6 and 0.9 from 1975 to 1995,[4] but it has fallen to 0.55 since 2000.[5] In non-OECD countries, energy elasticity was in the range of 1.1 to 1.4 during the earlier period, but it has fallen dramatically since then.[6] In 2005, India's had fallen to 0.8, and is expected to fall to 0.67 by 2021.[7] China's energy elasticity rose briefly from an average of less than 0.6 in the 1980s to 1.5 in 2003-04, but then fell in 2005 to 1.02, and to 0.87 in 2006.[8]

What is significant in this array of statistics is the variability in the relationship between energy use and growth of GDP. This demonstrates conclusively that there is no necessary connection between the two.[9] The linkage between economic growth and damage from energy use is thus institutional and based on political choices; it is not a purely natural relationship.[10] If energy taxes had long ago been set high and raised rapidly enough to offset the effects of higher incomes, capital could have substituted over time for energy in many contexts, and income growth could have continued.[11]

Of course, the idea that taxes on energy use should be introduced to forestall the effects of depletion presupposes a basic premise of ecological economics: future generations are likely to suffer if finite resources are rapidly consumed. The

standard compensation that neoclassical economists offer their grandchildren is the promise that the future will be like the past six or seven decades, when cheap oil and high-grades of ore permitted the price of raw materials to fall. Neoclassical economists also offer technological optimism that technical change will fully offset depletion. Prudence and intergenerational equity, however, require that such resources be rationed over numerous generations rather than being largely consumed within a few generations.

If institutional reforms, including environmental taxes, can achieve far more efficient use of resources and increased exchange of low-impact services, then economic growth per se may not be an immediate problem. However, those reforms need to be tested to determine the extent to which altered price signals and changes in cultural norms will continue to permit economic growth while stabilizing or reducing energy and materials consumption.

The key to achieving a synthesis of economic growth and conservation may thus depend on the kinds of policies that are applied to achieve growth. Since the prerequisites of growth are still not well understood by economists, there is considerable latitude for error.

When energy is subsidized by some governments in the mistaken notion that energy and capital are the keys to rapid development, obviously those policies run counter to conservation. Similarly, tariffs designed to protect home industries may also serve to discourage investment in new technologies that use less energy than older production methods.

Just as foolish as policies designed to promote growth by wasting resources are misguided efforts to conserve resources by stunting growth through macroeconomic policies. If a government were persuaded by ecological economists to halt growth for the sake of the environment, how should they do so? That is an unanswered question. If monetary or fiscal restraints were applied in a sort of reverse Keynesianism of intentional efforts to reduce growth, the result would likely be not only declining disposable incomes (the intended effect?) but also massive unemployment (an unintended effect). Macroeconomic management designed to maintain economic stability and growth remains more an art than a science. If ecological economists recommend limiting economic growth, they need to define the precise mechanisms for doing so, in order to evaluate the full consequences of any proposal.

From a Georgist (and a neoclassical) perspective, it would be absurd to interfere with the forward momentum of an economy just to prevent side-effects of negative aspects of the economy. Lower disposable incomes would not necessarily reduce the most harmful impacts on the environment in any case. Targeting specific causes of harm would be more useful than broad-brush efforts to slow the economy as a whole. For example, pesticides are used heavily even in countries with low per capita incomes. Policies designed to slow growth will probably not reduce consumption of nickel-cadmium batteries compared to alkaline batteries or increase the chances of proper disposal of the waste products. In rural areas, poverty may lead to deforestation more rapidly than affluence. In general, the damage caused by an activity may have little connection with the value-added that is associated with it.

A targeted approach to damage prevention through the use of environmental taxes that internalize marginal external costs may be the one point on which ecological, neoclassical, and Georgist economists already agree. Yet, agreement in principle does not run very deep when it comes time to act. Because of difficulty measuring damage to human health and to ecosystems in monetary terms, there are huge administrative and judicial obstacles to using environmental taxes that are high enough to change behavior (which is their purpose). First, there are obstacles to setting judicially permissible tax rates on sources of harm, beginning with the types of evidence of harm demanded in court and in legislative proceedings. The degree of certainty required about causation can only be obtained after bodies start to pile up, and even then no evidence is perfect. Second, there are problems of measurement and enforcement, particularly when harm is diffuse or occurs over prolonged periods. Third, existing companies prefer to be given tradable permits to pollute rather than having to pay for the right to do so. Thus, cap-and-trade systems start with a political advantage over taxation. For these and other reasons, the use of environmental taxes will continue to be honored more in the breach than in the observance. A precautionary principle that can legally define unforeseen risks but not stifle useful innovation has so far remained elusive, but without it, setting a fair price on pollution will happen only rarely.

Even if effective taxes on pollution or congestion can be designed, they address only a narrow range of types of damage from growth. A deeper principle is needed than “taxing bads.” This is the point at which Georgist economics has something distinctive to offer, something more than taxes that internalize external costs.

The contribution of Georgism is sometimes reduced to one policy: the tax on site values. Yet, behind that policy lies a simple, but powerful, principle that is widely neglected: the best way to solve problems is through indirect means. To be

indirect means that consequences are not self-evidently connected to causes. Taxing harmful substances to discourage their production or use is, by this definition, a direct policy. Income transfers to achieve more equal incomes is also direct. By contrast, Georgist policies have second-order and third-order effects on humans and the environment. Most of those effects have yet to be analyzed, but they are definitely indirect because they are not obvious upon inspection.[12]

Logically, one would expect that ecological economists would devise policy prescriptions that impose fewer impacts on nature than policies stemming from the Georgist view of land as location. Yet, logic does not always prevail in a world of paradoxical feedback loops. The central Georgist policy prescription is to tax all land at its full market value and to substitute that tax, to the extent possible, for all other taxes. Neither Henry George nor most of his followers in the 20th century conceived of this tax as an environmental policy. They saw it as a way of achieving equitable growth.

Ironically, though, site value taxation may conserve land, water, and other resources through indirect means more effectively than policies with that direct intention. For example, taxing the value of land has no direct effect on plans to develop land far from urban centers. Its effects on sprawl are entirely indirect. By encouraging intensive development in areas already built up, it simply reduces the demand for land in distant suburbs, exurbs, or informal settlements (in developing nations). Under a regime of high taxes on land, vacant and underutilized land in urban centers would be effectively forced into production.[13] This does not require paving over parks. Big cities typically have from 10% to 30% developable land that is occupied by parking lots, dilapidated buildings, or weeds and garbage. One- and two-story buildings in areas where demand would support high-rises is another form of underutilization. By applying constant economic pressure to develop on those who currently hoard usable sites for speculative purposes, city centers and inner-ring suburbs would rise from their current decay, and the demand for development in distant suburbs would fall sharply.[14]

With such a tax in place, rising residential and job density at the urban core would dramatically reduce the pressure to develop farmland at the urban fringe, thirty or forty miles from the urban center. Higher density would not only reduce development pressure in rural areas; it would also increase energy efficiency in the city by making transit service more affordable and reliable, thereby reducing dependence on private vehicles.

A similar tax on water rights in arid areas would reduce agricultural demand for water resources (shifting from water-intensive crops and encouraging drip irrigation, for example), and thus reduce the need to construct dams, with all of the problems they create for fish and other wildlife. With senior water rights holders abandoning their claims to water that is currently used wastefully, far more water would be available for in-stream flows in the summer.

In tropical countries with large landless populations, a tax on site values would force those holding large tracts of prime farmland, now used mostly for grazing, to transfer rights to those who would farm the land intensively. This would reduce the pressure by the landless to decimate the rainforest, which is rarely suitable for farming in any case. Watersheds and habitat for unique species can be preserved only if the poor are not forced to use that land because the rich are hoarding the most productive land.[15]

Georgist theory thus offers a model of development that indirectly and unintentionally reduces the conflict between growth and the environment. The incentive that promotes economic growth through intensification simultaneously reduces pressure on the environment caused by lateral expansion of human activity. Nor is the model based on the usual reasoning that claims that higher incomes permit more investment in anti-pollution equipment. No such assumption is required here. The Georgist model proposes that growth can reduce impacts over a broad range of environmental concerns, not just pollution.

Another benefit of the Georgist model of development in relation to environmental protection is the potential it brings for greater public acceptance of restrictions on damaging behavior. Fear of the unknown prevents change, and opportunities lessen fear. People are much more willing to give up what they currently hold dear if the opportunity exists to replace it without much trouble. Higher average wages and a lower rate of unemployment (resulting from higher turnover of capital goods) will make political dynamics more flexible.[16] Deadlocks that pit commercial interests against environmental values often seem permanent in a world of limited opportunities. Those deadlocks can be broken if economic opportunities abound.

The impact of Georgist policy on human population growth is one environmental consequence that is not clear. No form of economic theory has decisively shown which policies will arrest human population growth, short of famine and disease.

Coercion was only marginally successful in a totalitarian society (China) and an abject failure in a democracy (India). Anecdotal evidence suggests, however, that policies giving women greater employment opportunities are successful in reducing fertility. Urbanization has also reduced fertility rates throughout human history. If those are the two most crucial variables in limiting fertility, then Georgist economics scores well by increasing employment opportunities for both men and women and by making cities more livable.

Although the indirect effects of Georgist policies will have enormous environmental benefits, it is important not to overstate this fortuitous outcome. There is an inherent conflict between the growth of human activity and the availability of undisturbed habitat for other species. Georgist policies would redirect growth in more positive ways and buy time to develop additional methods to control the disruptions caused by human societies. However, Georgist economics is not sufficient to save the planet. In order to be ultimately successful in creating a sustainable economy, Georgists need to learn about limits from ecological economists, and the latter need to learn from Georgists about policies that can achieve environmental goals through indirect means. Only by learning from each other can the limits of their respective domains of knowledge become apparent.

Equity

In the past two centuries, the central ideological debate between conflicting economic theories has been about the tension between private property and social equity. Capitalists have favored the former because it rewards personal initiative and increases productivity. Socialists have emphasized the latter, claiming that only public management and economic planning can avoid exploitation and gross inequality.

Ecological economists have tended to side with the capitalists in this debate. In the almost canonical article “Tragedy of the Commons,” Garrett Hardin argued in 1968 that resources treated as common property are subject to abuse and spoliation, and that private property is necessary to prevent the destruction of the earth.[17] Hardin later amended this view by distinguishing between a commons with open access and one with restricted access, but he will be remembered for the original defense of private property.[18] Thus, common property may not be as indefensible as Hardin originally maintained. Yet, in the extensive literature on management of commons by Elinor Ostrom, Bonnie McCay, and others in the International Association for the Study of Common Property, the commons is little more than a broadening of the boundaries of private property.[19] A managed commons requires enforceable boundaries that prevent incursions from those outside the commons. According to this view, resources can be shared among members of a group, but sharing them more broadly, with an entire region, nation, or the globe, invites disaster.

While private property solves the problems caused by open access, it creates another set of problems, particularly in a growing economy. As average incomes grow, the price of access to fixed resources grows even faster. That means owners grow wealthier, while those lacking property are forced to pay a larger portion of their incomes to survive. Asset ownership and property income becomes more concentrated over time, and poverty deepens for the landless. The poor suffer the most from this state of affairs, but the health is damaged of all members of a society in which wealth is skewed.[20] Perhaps the most useful way of comparing ecological and Georgist economics on the question of equity is to consider different types of equity. I define three types (more may exist) as 1) intergenerational, 2) income and wealth, and 3) the dispersion of power.

Equity I: Integenerational Equity

A number of ecological economists have considered the issue of intergenerational equity.[21] They have proposed policies that would lead to a sustainable production of value from resources over hundreds or thousands of years. The basic moral principle involved in this analysis is that the use of resources to sustain affluence in the present should not diminish the affluence of future generations by depriving them of equivalent value from that stock of resources.

I make no effort here to discuss in depth the analysis by ecological economists of this issue. I presume most readers of this volume are already familiar with the writings of Daly and others about weak and strong forms of sustainability, which hinges on the question of how thoroughly capital can substitute for nature in the long-run production of economic value. I would note only that Daly’s insights on these issues are among his most important contributions to the field of economics.

The topic of intergenerational equity has unfortunately been ignored by Georgist economists (and most other categories of

economists as well). When Henry George wrote, the principle of entropy was not well known, and it has not played a significant role in the thought of his followers. As a result, the problem of resource depletion has not been an integral part of Georgist theory.

In fact, there is a tendency for ecological and Georgist economists to be directly at odds on questions of conservation. Whereas ecological economists are likely to favor policies such as severance or stumpage fees that raise the costs of extracting raw materials (including cutting of timber), Georgists tend to recommend taxes on resources in situ, which has the effect of encouraging more rapid extraction. This Georgist orientation toward nonrenewable resources is, however, a contingent view, not a necessary corollary of Georgist principles. Thus, it seems possible that some meeting of minds between ecological and Georgist economics is possible on questions of intergenerational equity.

Equity II: Income or Wealth Equity

The subject of intra-generational equity, or income and wealth distribution, has received far less attention within the field of ecological economics. Using the search engine at www.sciencedirect.com, only 12 articles appeared in a search of the journal Ecological Economics for “income distribution” and no results were found for “wealth distribution.” Of those that did appear regarding income distribution, they were about the Environmental Kuznets Curve, the effects on income distribution of efficient pricing of resources, or the Genuine Progress Indicator. None dealt with constructive policies to improve income or wealth distribution. Although one journal may not be entirely representative of the field of ecological economics, it appears to reinforce the negative stereotype that those concerned with the environment care more about plants and animals than about humans.

Herman Daly has been one of the rare exceptions to the general pattern.[22] He has addressed the issue of income distribution throughout his career. In his book Steady-State Economics and again recently, Daly called for the radical idea of both a lower and an upper limit on income.[23] He recognizes that many of the conservation and anti-pollution taxes recommended by ecological economists are regressive and thus require some method of offsetting the burdens on the poor.[24] In For the Common Good, Daly and Cobb did not propose to set an upper and lower limit on incomes, but instead proposed both “a combination of income and inheritance taxes, … social dividends, worker ownership of business, and guaranteed employment,” plus a negative income tax on low incomes, severance and pollution taxes, and application of the quasi-Georgist transformation of the property tax to a two-rate tax that would tax land more heavily than buildings.[25]

Daly calls for cap-auction-trade schemes to reduce use of resources or waste sinks to a sustainable level. However, beyond the problem of the regressivity of such proposals,[26] which he does at least recognize, there is another serious problem of equity which he does not acknowledge. Any system of property rights, whether it begins with a gift of rights or an auction of them, allows the owners to capture the subsequent increase in their value, which the owners do nothing to create. It also encourages hoarding that decreases new entrants to the field and thus stifles competition, which sustains inefficiency and high prices. A more equitable solution is a rising annual lease payment or some other provision for public capture of the unearned rise in the value of the resource. Despite his sensitivity to the plight of the poor, even Daly overlooks this fundamental point.

The more important limitation of Daly’s thought on the question of equity is that he tends to see the problem of wealth and poverty in terms of “redistribution” rather than “distribution.” That is to say, Daly, despite passing comments to the contrary, takes for granted a certain distribution of initial entitlements (property rights), from which flow inequalities in outcomes. When he discusses policy options, he thinks exclusively in terms of transferring income or wealth after the market has already caused its flows to be highly skewed. The possibility that modifying the basic ownership structure of assets by taxing site values is not an option he considers. When he does discuss rent taxation, he seems to think of it purely as a revenue-generating device.[27]

The question of how to achieve greater equity of incomes and wealth was one of two primary concerns of Henry George. (His other major concern was the efficient use of resources, particularly urban land. Because this dovetails with the efficiency orientation of neoclassical economics, many followers of George have emphasized these issues to the virtual exclusion of equity issues.)

The central Georgist policy prescription (a tax on site values) is designed to achieve greater equity, but in a way quite

different from most proposals.[28] It is concerned not with equalizing income through after-tax redistribution, but with creating a more just distribution of income before taxes by altering the conditions under which exchange occurs. The purpose of the tax on site values (and an offsetting reduction in other taxes) is thus not to raise revenue that can be used to ameliorate poverty. Rather, the aim is to reduce income from unearned gains and to raise pre-tax wages. How a tax on site values would modify market conditions is more complex than can be explained adequately in this chapter, but I shall provide here a brief overview.[29]

To understand the effects of site value taxation, one must first recognize that every tax (on wages, sales, gross receipts, etc.) already falls on economic rent or site values by reducing aggregate income. This is more easily recognized in reverse: a cut in the federal income tax shows up almost immediately as a rise in real estate prices, in the same way a farm subsidy is capitalized in a higher price for farmland. By increasing aggregate demand, a tax cut raises production of all commodities. Since all economic transactions occur at some location, the rise in production and sales leads in the final analysis to an increased demand for sites or locations, the supply of which is perfectly inelastic. Thus, increased aggregate demand causes the price of land to rise. The whole process works in reverse if income or sales taxes are increased. Since all taxes ultimately come out of rent or site values, it means that every current tax is a tax on site values PLUS a burden on or disincentive to productive activity.[30] To estimate the taxable value of land, the tax base would be the price of land after other taxes were reduced or eliminated.

Just as a reduction in other taxes would raise the price of land, the first-order effect of a tax on site values would be to reduce it. An annual tax of 30% on the value of land would transfer around 90 percent of the value of landholdings from private hands into public coffers.[31]

The effect of a site value tax on the distribution of wealth depends on the total value of land compared to other assets.[32] To develop an estimate of that value would require piercing the veil of paper assets (stocks, bonds, mortgages) to examine the underlying assets that give those paper assets their value. The framework of cost accounting is not designed to provide that information. A substantial portion of what an accountant deems to be “profits” of corporations, partnerships, and sole proprietorships are actually economic rents, i.e., the value-added by the location of its offices, production facilities, warehouses, and so on. Accounting practices further obscure the trail by conventionally assigning costs and revenues only as transactions occur and by recording land at its historic cost, not its market value, and certainly not its current annual contribution to realized income. Imputed income from nondepreciating assets (i.e., land) therefore escapes notice entirely because there are no location-related transactions to record when someone buys a DVD at WalMart or visits a doctor. Yet, the location is an extremely important part of each of those transactions and adds value to them. (Even mail order warehouses are located in population centers, not the middle of the Nevada desert.) The information system (accounting procedure) simply fails to record the value added by land. As a result, corporate and government accounts vastly underestimate the contribution of land to the value of output, and until that is corrected, researchers must rely on indirect measures.[33]

My own very rough estimate is that the aggregate value of land in the U.S. is around seven or eight times the GDP,[34] whereas the net value of fixed reproducible capital is around twice the value of GDP. That would mean economic rent amounts to about 20-30 percent of national income and returns to fixed capital around one-fourth that much. If site values constitute two-thirds of the value of all fixed assets, against which stocks, bonds, and mortgages are issued, then a tax of 30 percent on site values would reduce the value of those paper assets by around 60 percent.[35] Since the top 10 percent of wealth-holders hold 80 to 90 percent of those assets,[36] the transfer of 60 percent of the value of those paper assets to the public would amount to a dramatic shift in wealth distribution. Wealth distribution in the U.S. would change from one of the most unequal in the world to one of the most equal. (The current Gini coefficient for net worth in the U.S. is around 0.8, comparable to Brazil and Zimbabwe before its collapse.)[37]

A radical reduction in the value of assets held by the richest members of society is part of the equalizing effect of a tax on site values. The other effect is the spur such a tax would be to wages.

The revolutionary claims made by Henry George are that 1) productive urban land is currently underutilized (as a result of satisficing instead of optimization—see footnote 14 above), 2) that labor and capital are currently forced onto marginal urban locations that add less value than could be produced with the same inputs in better locations, 3) that a tax on site values will encourage more intensive use of prime locations (for commercial, industrial, or residential purposes), and 4) the result will be a general rise in productivity, leading to a rise in average wages and higher returns to capital equipment.

Removing taxes on labor (starting with the payroll tax) would also provide low-income households with additional net income. All of these benefits to the working poor and the middle class occur because of the incentive effects of the site value tax and reduced taxes on labor, not from any redistribution of the revenues generated.

A Georgist economy would not provide everyone equal incomes or other results. Rather, the claim made here is that it would change the structure of opportunity, so that privilege would not be the basis of wealth and inequality.

Equity III: The Dispersion of Power

If we extend the analysis of equity into the arena of political power, the concentration of wealth and power among large corporations is cause for concern. The corporate (limited liability) form of organization and the legal difficulties holding them accountable are not the chief reasons they have attained such power in the modern world. Instead, their power stems largely from their size, as measured by their assets. They are not monopolies in the strict sense of the word, and they may even face price competition from similar giants. Nevertheless, they dominate decision-making everywhere in the world because their concentrated economic power permits them to buy greater scientific expertise and legal talent than most public agencies can, and their political influence enables them to bend foreign policy to their bidding, including the overthrow of regimes they do not like (e.g., the United Fruit Company in Guatemala, ITT in Chile).

Neither ecological nor Georgist economists have had much to say about this aspect of inequity.[38] Both tend to take industrial organization as a given. But, in fact, different methods of regulation and taxation will have an impact on the concentration of ownership by corporations.

The kinds of policies favored by environmentalists tend to favor large corporations over smaller companies. Regulation, cap-and-trade, and auctioning of pollution rights all favor existing companies over challengers by raising barriers to entry to new companies and allowing existing companies to hoard their rights. Only pollution taxes that require full compensation for ongoing social costs are neutral with respect to the size of firms.

Georgist tax policy is not consciously designed to reduce the concentration of industrial and commercial ownership, but that would be the likely effect. A great deal of the power and size of large companies stems from their control of assets that generate economic rent. (That includes urban land, petroleum deposits, minerals, forests, fisheries, as well as patents and other intellectual property rights.) By definition, rents are cost-free income; they are what one does not have to work for. They are the surplus that derives from owning and excluding others from strategic locations, deposits, or bodies of information. Rent-producing assets make possible the funding of researchers, legal teams, and lobbyists that enable large firms to sustain their pre-eminent position. Treating economic rent as the primary source of tax revenue would not eliminate the excessive power of corporations, but it would curb it.

Large corporations (particularly resource companies such as oil, mining, and timber companies) are also land- and capital-intensive. Large retailers and financial companies may not own natural resources or large amounts of equipment, but they have significant investments in real estate in the form of stores and branch offices. Consequently, large companies tend to have high ratios of capital per employee.[39] Even though corporations may complain about the effects of payroll and income taxes (since they partially fall on employers when labor demand is inelastic), taxes on wages give a comparative advantage to large companies and permit them to grow larger. That is because they hurt small, labor-intensive companies more than the big capital-intensive ones. Thus, a tax on site values will benefit small companies and discourage concentration of ownership by large ones.

Why Equity is Important for the Environment

Ecological and Georgist economists have much to learn from each other about equity. Both, however, need to understand that it is not merely a matter of justice or fairness for humans. All forms of equity are necessary preconditions for protecting the environment.

An example that captures this principle is a story Erik Eckholm told decades ago about a rural reforestation project in Ethiopia to control erosion and provide firewood to villagers.[40] Landless laborers were hired to plant the seedlings. When the project managers went into the field to evaluate the success of the program, they discovered that many of the seedlings had been planted upside down. The laborers were not naïve; they were fully aware of what they were doing. They acted in that manner because they knew the benefits of the project would accrue to the landowners in the area,

driving a deeper wedge between their own poverty and the wealth of the landowners.

If the problem of equity is ignored, the results are not only rising levels of poverty; efforts to achieve conservation will also be constantly thwarted. Wildlife preserves are a last ditch effort to sustain the habitat of endangered species. But a preserve can work only if peasants on surrounding land have the means of earning an adequate income legally. If the alternatives to poaching are sufficiently rewarding, they are more likely to respect the boundaries of the preserve and the rules against poaching.

The Green Revolution is another example of how inequity is associated with environmental damage. The introduction of new seed varieties raised yields. However, achieving those yields a) reduced genetic variability among seeds, b) increased use of pesticides, chemical fertilizers, and mechanical tractors (displacing water buffalo), and c) increased reliance on irrigation systems, which justified the construction of large-scale water projects that altered natural systems. At the same time, increased productivity raised the price of land and displaced millions of peasants, leaving them landless and forced to pay higher rents to landlords.

Designing Solutions

The point of deepest philosophical conflict between ecological and Georgist economics is one that has only been hinted at thus far. It seems possible that specific issues about natural limits, economic growth, and equity can probably be resolved if there is agreement about methodology. In that regard, there is a methodological dispute that may stand in the way of any synthesis between ecological and Georgist economics.

The key issue is whether it is possible for a single policy instrument to do double duty. Herman Daly, representing ecological economics, answers resoundingly in the negative. Georgist economics begins with the premise that a single policy can bring about more benefits than we can imagine. Ecological economists stand in a tradition beginning with Malthus that emphasizes scarcity, trade-offs, and TANSTAAFL.[41] Georgists stand in the tradition of multiplying loaves and fishes to feed the multitude and the principle that some trade-offs are merely a result of lack of imagination.

Daly throws down the gauntlet in Valuing the Earth: Economics, Ecology, Ethics, where he declares, “The basic rule that for every independent policy goal we must have an independent policy instrument has been emphasized by Professor Jan Tinbergen but seems to have been forgotten in recent discussion. Yet we all recognize “you can’t kill two birds with one stone” at least if they are flying independently. If they are flying in tandem or sitting on the same fence, then one might manage to do it. This book argues, among other things, that we need a third stone because the birds are flying independently. The “birds” are the three goals of allocation, distribution, and scale. The first two have a long history in economic theory and have their two specific policy instruments. The third, scale, has not been formally recognized and has no corresponding policy instrument.”[42]

The reason this is such a fundamental principle for Daly only becomes apparent when one reads the article in Land Economics from which this chapter in VTE is drawn. In the earlier journal article, Daly explains: “An example of the confusion that can result from the nonrecognition of the independence of the scale issue from the question of allocation is provided by the following dilemma (Pearce et al. 1989, 135). Which puts more pressure on the environment, a high or a low discount rate? The usual answer is that a high discount rate is worse for the environment because it speeds the rate of depletion of nonrenewable resources and shortens the turnover and fallow periods in the exploitation of renewables. It shifts the allocation of capital and labor toward projects that exploit natural resources more intensively. But it restricts the total number of projects undertaken. A low discount rate will permit more projects to be undertaken even while encouraging less intensive resource use for each project. The allocation effect of a high discount rate is to increase throughput, but the scale effect is to lower throughput. Which effect is stronger is hard to say, although one suspects that over the long run the scale effect will dominate. The resolution to the dilemma is to recognize that two independent policy goals require two independent policy instruments--we cannot serve both optimal scale and optimal allocation with the single policy instrument of the discount rate (Tinbergen 1952).”[43]

Something odd is going on here. The pre-analytic vision behind Tinbergen’s rule, is one in which reality is divided up into pieces that conform to our categories, with each category having its own form of optimality. That fragmentation contradicts Daly’s criticism of the fallacy of misplaced concreteness and his religious vision of the world.[44] In the example he

chooses, the discount rate is effectively a function of the long-term interest rate that emerges from quadrillions of decisions made within markets; it can hardly be deemed a policy instrument at all. Central banks can set short-term rates, but no one has yet learned the secret of managing long-term rates. Since there are a large number of moral trade-offs associated with high and low interest rates (with more than allocative efficiency and optimal throughput at stake), it is perhaps best that long-term rates are determined through complex social patterns, not by conscious design.

In fact, governments are limited to extremely few levers in trying to manage human societies: taxes, subsidies, monetary policies, regulations, and direct service provision (including military action). After a century, we still know little about the second- and third-order effects of most of those policy instruments, and in some cases, we are still trying to fathom the first-order effects. We certainly know even less about the potential for interaction among the second- and third-order effects and the ways in which different agencies and jurisdictions of government work at cross-purposes with each other.

Tinbergen's notion that there needs to be a one-to-one correspondence between goals and policy instruments makes perfect sense in a world represented by simultaneous equations, but it quickly loses its relevance in the world of administrative non-compliance, incentive and disincentive effects, confused information signals, complex feedback loops, and unforeseen consequences. There is nothing linear about the effects of policy instruments once they dip their toes in the stream of history. Indeed, it is surprising that Tinbergen's rule would ever have entered the field of ecological economics. As Ropke says about the origins of the discipline, "Systems thinking in a broad sense was shared baggage for several of the initiators, particularly those coming from the natural sciences, but also for some of the economists."[45]

Georgist philosophy presupposes no artificial boundaries that separate policies and outcomes into separate and distinct bundles. The primary claim by Georgists, in fact, is that its primary policy instrument, a tax on site values, will not only increase equity in a society, but it will also improve efficiency (by making the land market less lumpy and subject to hoarding). As Henry George wrote in 1880:

> What I have done in this book… is to unite the truth … of Smith and Ricardo to the truth perceived by … Proudhon and Lassalle; to show that laissez faire … opens the way to a realization of the noble dreams of socialism. (Preface to the 4th edition of Progress and Poverty)

In short, George's aim was to synthesize rather than compartmentalize. This runs directly counter to the logic of the Tinbergen-Daly rule that each policy can have only one effective outcome.

The followers of George have noted the dual-purpose nature of his conclusions—namely, that site value taxation solves at least two problems simultaneously, without sacrificing one benefit for the other. However, there has been little effort to extent this finding from the particular case to a more general principle.

For George himself, the general principle was that nature is benign and ultimately favors symbiosis over competition, if human institutions conform to natural principles. This conforms with the view of microbiologist Lynn Margulis that symbiogenesis or co-evolution between bacteria and host is more important than competition in determining adaptive capacity and differential survival rates in evolutionary development.

Another interpretation of the general principle in Georgist thought is that tradeoffs may be unnecessary in some synergistic systems. Biodynamic farming may be both more productive and less dependent on chemical inputs than more conventional farming methods. Historically, urbanization beyond a certain threshold made populations more disease resistant and more economically productive (McNeill, Plagues and Peoples, p. ??). Taxes on greenhouse gases that are used to offset other consumption or payroll taxes may have a "triple dividend," reducing climate change, more equitably distributing income, and promoting economic growth. (The validation or disconfirmation of the "double dividend hypothesis" depends largely on whether the economist evaluating the topic was funded by an oil company or a public institution.)

Since any claim that is it possible to overcome a specific tradeoff is so often met with skepticism, assertions of synergistic effects, particularly in the social sciences, are rare. That is precisely why a multi-disciplinary effort is needed to investigate this phenomenon with an open mind. If nature is going to give us something for free, it is foolish to continue operating as if a trade-off between two values is necessary.

Conclusion

Ecological and Georgist economics tend to define themselves in opposition to neoclassical economics and to ignore each other. It is time they began to learn from each other as well as from other "alternative" versions of economics such as Austrian, Institutional, post-Keynesian, binary, and others.

Georgists and ecological economists definitely agree on one subject: the need to reintroduce the importance of land in economics. They differ profoundly on the meaning of land, however. The proper response from both sides is to learn respect for the perspective of a potential ally. Since their primary foci are different (a sustainable environment for ecological economics; social justice for Georgists), they are not in conflict with each other. It should be possible to reintroduce land in more than one way into economic discourse.

Regarding the question of growth and its impact on the environment, there are surely differences between ecological and Georgist economists at the level of theory. Ecological economists have a strong presumption against economic growth; Georgists have far fewer compunctions about embracing growth without any reservations. Nevertheless, the policies proposed by Georgists may actually be more effective in preventing the damage caused by economic growth than the policies favored by ecological economists.

Both ecological and Georgist economists are concerned with issues of equity, but they differ greatly in what sorts of equity they emphasize. Ecological economics focuses on intergenerational equity, and Georgists focus on present-day inequities in wealth. Neither has a theoretical model about inequities of power, and neither seems particularly interested in the connection between inequity and environmental damage. Thus, not only could they learn from each other, each has new areas of research that could prove fruitful on unexplored topics.

Methodologically, ecological and Georgist economists differ on a key issue—the Tinbergen rule that each policy goal requires a separate policy instrument. Speaking for ecological economists, Herman Daly has repeatedly argued for the Tinbergen rule. Georgist economists question the validity of the rule, for if it were true, the synthetic possibilities of George's thought (reconciling the goals of efficiency and equity) would be lost.

Finally, it is important to remember that ecological and Georgist economics (and many other branches of human understanding) are not rivals for intellectual loyalty. Each contains some element of truth, which we ignore at our peril. If we are to use knowledge to solve problems, that goal can only be achieved by transcending the artificial barriers that so often stand between competing theoretical perspectives.

Notes

1. **^**Referring to institutional or evolutionary economics, Spash and Villena (1998 p. 26) assert that " there has been a tendency for the institutional literature to centre upon presenting criticisms of the neo-classical approach, rather than suggesting constructive alternatives." The same problem plagues other forms of heterodoxy in economics. Clive L Spash and M.G. Villena. 1998. Exploring the approach of institutional economics to the environment. Environment Series, vol. 11. Department of Land Economy, University of Cambridge, United Kingdom; cited in Inge Ropke. 2005. Trends in the development of ecological economics from the late 1980s to the early 2000s Ecological Economics 55: 279.
2. **^**The percentage change in energy consumption associated with one per cent change in GDP.
3. **^**Jeffrey M. Fang, J. C. Chen, "Empirical Analysis of CO2 Emissions and GDP Relationships in OECD Countries," 2007. http://www.usaee.org/usaee2007/submissions/ExtendedAbs/Jeffrey%20M.%20Fang.doc
4. **^**Energy Information Agency, U.S. Dept. of Energy, International Energy Outlook (1995), Table 5, "Average Energy Elasticity, 1970-2010: World, OECD, Non-OECD, and Non-OECD Asia," p. 13.
5. **^**Gately, Dermot, and Hillard G. Huntington. The Asymmetric Effects of Changes in Price and Income on Energy and Oil Demand. In Working Papers. 01-01. Jan 2001. C.V. Starr Center for Applied Economics, New York University. http://www.econ.nyu.edu/cvstarr/working/2001/RR01-01.PDF. Summarized in Gar W. Lipow, Price Elasticity of Energy Demand: A Bibliography, http://www.carbontax.org/wp-content/uploads/2007/10/elasticity_biblio_lipow.doc.
6. **^**Energy Information Agency, , International Energy Outlook (1995), Table 5, page 13.
7. **^**N.R. Krishnan, "To power 7-8% GDP Growth," Business Line, May 9, 2006. http://www.thehindubusinessline.com /2006/05/09/stories/2006050900491000.htm
   Also see "A Strategy for Growth of Electrical Energy in India," Dept. of Atomic Energy (India), http://www.dae.gov.in

/publ/doc10/pg40.htm.

8. **^**Jeffrey Logan, International Energy Agency, EIA testimony U.S. Senate Committee on Energy and Natural Resources, 3 February 2005, http://www.iea.org/textbase/speech/2005/jl_china.pdf. Also see Yongsheng Zhang, Chaoyu Zheng, "The implications of China's rapid growth on demand for energy and mining products imported from Australia," Economic Papers, (Economic Society of Australia), March, 2008, p.4. <http://findarticles.com/p/articles/mi_m0PAO/is_1_27 /ai_n24379883/pg_4>
9. **^**However, the decline in energy elasticity has been due more to changes in the fuel mix—shifting from coal to petroleum and natural gas--than to energy-conserving technical innovation. As oil and gas prices rise, and substitution becomes more costly, elasticities will presumably decline more slowly. Robert K. Kaufman. 1992. A Biophysical Analysis of the Energy/Real GDP Ratio: Implications for Substitution and Technical Change.
10. **^**The fact that energy intensity (energy use per unit of income) is more than twice as high as in developing countries attests to the importance of institutions, particularly accurate market signals, in achieving economic efficiency. See Energy Information Agency, , International Energy Outlook (2004), Figure 25, page 25. http://tonto.eia.doe.gov/FTPROOT /forecasting/0484(2004).pdf
11. **^**Ecological economists are not the only ones to question whether growth can continue without a commensurate increase in energy consumption. Neoclassical economists also tend to think of productivity in physical terms and presume that growth is tied to cheap energy. The connection between the "oil price shocks" of 1974 and 1979 and subsequent recessions became an article of faith among most economists. However, the evidence does not bear out that conclusion. Examining disaggregated industry data for the United States, Germany, Japan, and the United Kingdom, Bohi found these countries experienced varying consequences from the 1973-74 and 1979-80 shocks. For example, Japan managed to avoid a recession after the 1979-80 oil price shock even though the other three countries did not. In addition, employment and capital formation were no more affected in energy-intensive sectors of the four economies than other sectors. Rather than oil shocks causing unemployment and other symptoms of recession, Bohi concluded that restrictive macroeconomic policies, designed to prevent inflation, were responsible. 1) Douglas R. Bohi and Michael A. Toman. 1996. The Economics of Engery Security. Boston: Kluwer Academic, pp 50-51. 2) Douglas R. Bohi. 1989. Energy price shocks and macroeconomic performance, Washington, DC: Resources for the Future. 3) Douglas R. Bohi. 1991. "On the Macroeconomic Effects of Energy Price Shocks," Resources and Energy, 13, pp. 145-162. 4) Helliwell, J. F. "Comparative Macroeconomics of Stagflation," Journal of Economic Literature 26 (1988): 1-28. Brazil's experience also contradicted common sense expectations during the oil price shocks. Ecological Economics. Vol. 6: 35-56.
12. **^**Another example of an indirect effect is the rise in death rates that resulted from limiting speed limits on interstate highways to 55 mile per hour from 1974 to 1995. The paradox is solved if one considers increased use of two-lane rural highways, which are more dangerous than divided highways. The net effects of the 55 mph limit are hotly contested, and my aim is not to enter the debate. My point is simply that shifts among types of highways may have led to counter-intuitive consequences, thus exemplifying an indirect effect. It also reveals that indirect effects are often contrary to common sense.
13. **^**A mathematical demonstration of the effects of land-value taxation on development can be found in Nicolaus Tideman, 1999. Land Value Taxation is Better than Neutral: Land Taxes, Land Speculation, and the Timing of Development. In Kenneth C. Wenzer. 1999. Land Value Taxation: The Equitable and Efficient Source of Public Finance. Armonk, NY: M.E. Sharpe. Pp. 109-133. Intuitively, the response to a tax on site values can be seen in the following example. If a vacant one-acre parcel at the center of the city is worth $10 million, the annual rental value of the land will be about $300,000. Imagine the land is currently occupied by a blacktop parking lot (no structure) yielding $180,000 per year (about $500/day) or an abandoned building yielding no revenue. The owner may continue this way indefinitely, even though the owner loses the opportunity cost of developing the site or selling to someone else. Market forces will not drive out the inefficient owner who underutilizes the site. However, if the local government imposes a tax of just 6% on the land, the market price of the lot will fall to $3.33 million (through a capitalization process), and the tax will be $200,000 per year. Whether the land is used as a parking lot or an abandoned building , the owner will have to expend cash to keep it. Either way, the tax will effectively force the owner to build or sell.
14. **^**Some economists believe the tax on land is purely neutral. They agree that a reduced tax on buildings will encourage development, but they doubt that a tax on bare land would promote development. They argue that any tax on infra-marginal income will not affect behavior. That view presupposes 1) that the only relevant incentive from a tax is the price effect, not the income or liquidity effects, and 2) that all property is currently developed to its highest and best use. The second premise is decisive. This precisely parallels a debate in the 1990s between engineers and economists over whether a tax on energy use would encourage investments in energy conservation. Economists argued that a tax would not promote conservation because profitable cost-saving investments would have been made already. Operations research engineers had plenty of anecdotal evidence that tens or hundreds of millions of dollars of conservation investments with internal rates of return from 20% to 50% per year. In the end, theory won out over empirical evidence. However, it was the wrong theory. Herbert Simon's concept of "satisficing" or "bounded rationality" suggests that economic actors do not seek out all profit-making opportunities, but instead optimize solely within a restricted set of options (by "look[ing] for satisfactory choices instead of optimal ones"). See Herbert A. Simon, 1979. Rational Decision Making in Business Organizations. American Economic Review. Vol. 69, No. 4, (September), pp. 493-513. In the absence of external pressure (competition or taxes), managers and property owners do not consider all opportunity costs

and do not make the effort to take advantage of all profitable opportunities. As a result, when a tax is applied, managers seek to reduce the tax as efficiently as possible by investing in high-yield energy conservation projects (in the case of an energy tax) or by investing in income-yielding development (in the case of a tax on site values). That is why both of those taxes have beneficial social effects.

15. **^**Only about 6% of the Amazon rainforest is on fertile soil.
16. **^**Mason Gaffney, "Tax-induced Slow Turnover of Capital," American Journal of Economics and Sociology, date , pages. (See www.masongaffney.org) Gaffney has explored a variety of second- and third-order effects of Georgist policy. The increase in the turnover of capital as a result of site value taxation is one of his most original and distinctive contributions. Briefly, the tax on site values works in the following manner. A high tax rate would encourage more efficient use of urban sites, which would entail shorter periods between renovation or rebuilding on any site. First that would mean building on vacant buildable sites, which does not include parks. Vacant lots constitute anywhere from 5% to 25% of a city's area. Second, it would encourage restoring of old buildings or tearing them down and building new ones. Higher turnover of capital simply means more construction per unit area per year. That results directly in more jobs for construction and maintenance, and other secondary jobs, the number depending on the local multiplier effect (which would also rise because less money would leak out as rent to absentee landlords in other jurisdictions). The basic principle is that long-lived capital is labor-saving; short-lived capital (based on high turnover) increases the demand for labor. Greater demand for labor strengthens the power of labor and increases opportunities for the average member of society.
17. **^**Garret Hardin, "Tragedy of the Commons," Science, Vol. 162, pp. 1243-1248, Dec. 13, 1968.
18. **^**Garrett Hardin, "Tragedy of the Unmanaged Commons: Population and the Disguises of Providence," in Robert V. Andelson, ed., Commons without Tragedy (London: Shepheard-Walwyn, 1991), 162-185. It is not an accident that this essay by Hardin appears in a book edited by a Georgist. In private correspondence with the editor, reproduced on page viii of the volume, Hardin wrote, "I have known … of Henry George's work for a long time and always thought it a shame that he could not have been born two centuries earlier and laid out the ground rules for the development of the New World." (Here Hardin ignores the fact that the optimist William Godwin, a precursor in some ways of George, was the foil against which Thomas Malthus wrote in the late 18th century. Even John Locke, writing two centuries before George in his Second Treatise, betrayed more sympathy for universal claims on the commons than Hardin.)
19. **^**Their treatment does not make the commons merely an extension of private property. Their work shows common property is in fact superior to private ownership in managing resources with mobility (herds of land animals, fisheries, groundwater, etc.) or resources requiring long-term institutional stewardship based on local knowledge systems. My aim is not to denigrate work on common property. My purpose is solely to indicate the limits of its applicability.
20. **^**Norman Daniels, Bruce Kennedy, Ichiro Kawachi, "Justice is Good for Our Health: The Social Determinants of Health Inequalities" Daedelus, September 22, 1999, Vol. 128, No. 4, pp. 215 ff. In the United States, income inequality accounts for about one-fourth of the difference in mortality rates between states, after controlling for differences in state median income. See Kennedy B.P., I. Kawachi, D. Prothrow-Stith. 1996. Income distribution and mortality: cross-sectional ecological study of the Robin Hood index in the United States. British Medical Journal, 312:1004-1007. (See also correction in British Medical Journal 1996;312:1194).
21. **^**Richard B. Howarth. 1998. "An Overlapping Generations Model of Climate-Economy Interactions." Scandinavian Journal of Economics 100:575–591. Richard B. Howarth and Richard B. Norgaard. 1995. "Intergenerational Choices under Global Environmental Change." In Handbook of Environmental Economics, ed. D. W. Bromley. Oxford: Basil Blackwell. . Richard B. Howarth and Richard B. Norgaard. 1990. Intergenerational Resource Rights, Efficiency, and Social Optimality. Land Economics. 66(1): 1-11. Emilio Padilla. 2002. Intergenerational equity and sustainability. Ecological Economics. Volume 41, Issue 1, April, Pages 69-83. Robert C Lind. 1995. Intergenerational equity, discounting, and the role of cost-benefit analysis in evaluating global climate policy. Energy Policy, Volume 23, Issues 4-5, April-May, Pages 379-389.
22. **^**In reference to the field of ecological economics, Ropke (2001) says: "Considering the interests of future generations, the scale of the economy has to be limited, and therefore, the issue of equity and distribution comes to the fore. Because of the environmental limits, the poor cannot be cared for by continuing economic growth, so the ethical challenge to take care of other human beings calls for an increased focus on redistribution." This statement accurately reflects an ongoing concern of Daly, but it is hard to find any evidence of it among ecological economists outside his writing. Inge Ropke. 2005. Trends in the development of ecological economics from the late 1980s to the early 2000s Ecological Economics 55: 267.
23. **^**"If we must stop aggregate growth because it is uneconomic, then how do we deal with poverty in the SSE [steady-state economy]? The simple answer is by redistribution—by limits to the range of permissible inequality, by a minimum income and a maximum income." Herman Daly, A Steady-State Economy, speech before the Sustainable Development Commission, UK, April 24, 2008. The speech is reproduced at http://www.theoildrum.com/node/3941#more. Downloaded 6/26/2008.
24. **^**"The regressivity of … a consumption tax could be offset by spending the proceeds progressively, by the limited range of inequality [between permissible upper and lower incomes], and by the fact that the mafia and other former income tax cheaters would have to pay it. Cap-auction–trade systems will also increase government revenue, and auction revenue can be distributed progressively."

25. **^**Herman E. Daly and John B. Cobb, Jr. 1994 [1989]. For the Common Good. Second edition. Boston: Beacon Press. Chapter 17. The quote is from page 331, where the idea of a one-to-ten ratio of low to high incomes is discussed as the desired aim of political evolution, but not a currently acceptable proposal.
26. **^**Any policy that raises consumer prices functions as an excise tax. An excise tax is steeply regressive with respect to current income, and somewhat regressive with respect to permanent income.
27. **^**See below for a discussion of the problems associated with Daly's insistence that each policy instrument should be associated with only one goal.
28. **^**Site value taxation is not the only policy prescription that derives from Georgist analysis. Another major source of unearned income stems from the monopoly power created by patents and copyrights. George himself favored copyrights but believed that patents should be eliminated. A more balanced Georgist approach to intellectual property would be to protect all forms of it as private property but to limit the monopoly aspects of it to a few years (perhaps five or ten), then to impose a progressively increasing fee that would either encourage licensing of the information or transfer into the public domain. The aim should be to balance the private aspect of innovation (the "romantic" idea of single authorship of ideas) with the social nature of intellectual creation. This would also raise the cost of holding information off the market that would be socially beneficial if more widely available.
29. **^**A good starting point is Fred Harrison, ed. 1998. The Losses of Nations. London: Shepheard-Walwyn. Also see numerous articles by Mason Gaffney at www.masongaffney.org, and Nicolaus Tideman's work on deadweight losses of taxes on productivity, including one chapter in The Losses of Nations.
30. **^**Why then have societies not shifted all taxes directly to the base of site values and bypassed all of the deadweight loss associated with other taxes? The answer lies in the distribution of burdens. A tax on site values falls solely on landowners. (Tax shifting depends on some degree of elasticity of supply.) A tax on wages or consumption falls on others as well as the landowner, and enhances the relative power of landowners. To begin to understand the politics of competing tax bases in actual historical conditions, one might compare the New England democracy that relied heavily on the property tax since the 17th century, with the Southern plantation economy that impoverished working people by avoiding direct taxation of property. The landed aristocracy of Latin American, like the slaveocracy of the southeastern U.S. also assiduously avoided taxes on land, and still does.
31. **^**A tax on the market price of land leads to a reduction of that price and thus to the value of the asset for those who own it. The price, after-tax is, Price = Annual Rent / (real interest rate + tax rate). If the real interest rate is 3%, then a tax of 12% on the price of land will reduce the price by approximately 83% (because x/.15 is approximately 83% less than x/.03) relative to a situation in which there is no tax. A 15% tax will capture 83% of the annual rent for public use. What remains will be capitalized as the market price at which land would trade. If the tax rate on site values were 27%, the tax would capture about 90% of the rent, and market price would be 10% of the price in the absence of any tax.
32. **^**The reader should be mindful that 90-95% of site values is concentrated in urban areas, not in the vast expanses of farms and forests, which have low value per acre. A single acre of land in midtown Manhattan has the same market value as a thousand acres of Midwestern farmland.
33. **^**Most economists assume that land is not of great significance in an industrial or information-based economy. That bias is reinforced by official statistics, which are based on faulty methodology. To begin with, no official estimate of economic rent takes into account the value of land that is captured by existing taxes. That factor alone means the estimates are inaccurate not just marginally, but by one or two orders of magnitude. Mason Gaffney. 2008. The Hidden Taxable Capacity of Land. International Journal of Social Economics. Summer (forthcoming) discusses other aspects of the deeply flawed methodology by which the national income accounts and studies by Raymond Goldsmith have estimated aggregate rent.
34. **^**I estimated that ratio as part of a project carried out at Redefining Progress in 1995, in which we sought to estimate the capacity of all "green taxes" to replace existing taxes in the state of California. The potential revenues from site value taxes were larger than all other environmental taxes (air, water pollution, water rights, congestion pricing, noise, solid waste) by an order of magnitude. Our report was never published since the foundation that financed the preliminary work is financed almost entirely from site rents and presumably did not like our conclusions; so they cut off funding. The method for estimating site values involved working from official statistics of property value in California and adjusting for biases in assessment related to Proposition 13. Extrapolating those findings to a national level involves estimating the capitalized value of the impact of all federal taxes on site values. (This is a crucial step, that has been left out of most other efforts to estimate the taxable capacity of sites.) I readily acknowledge the imprecise nature of the results, but I would contend that they are more accurate in terms of order of magnitude than official estimates or Goldsmith's estimates, on which so many economists rely. As Keynes is reported to have said, "It is better to be vaguely right than precisely wrong." (The actual source for this statement was probably Wildon Carr, a philosopher who was a contemporary of Keynes.)
35. **^**Ninety percent of two-thirds. Refer to footnote 31 for an explanation of how a 30 percent tax rate collects 90 percent of economic rent.
36. **^**Arthur B. Kennickell. 2006. Currents and Undercurrents: Changes in the Distribution of Wealth, 1989–2004. Federal Reserve Board, January, p. 55, Table A-4.
37. **^**Kennickell, p. 10, Table 4, for the Gini coefficient for wealth in the U.S.

38. **^**An exception is the discussion of problems associated with unequal power in Joshua Farley and Herman Daly. 2004. Ecological Economics: Principles and Applications. Washington, D.C.: Island Press.
39. **^**Mason Gaffney. 1976. Toward Full Employment with Limited Land and Capital. In Arthur Lynn, Jr. (ed.), Property Taxation, Land Use and Public Policy. Madison: Univ. of Wisconsin Press. pp. 99-166. On pages 113-114, he states "Factor mix also tends to change with size of business and wealth of individuals. As a broad statistical truth, the application of labor to property tends to be regressive. The larger holdings use less labor per unit of property value." Since large firms use more site value on average than smaller firms (measured by net worth) to generate a dollar of income, a tax on site values would fall more heavily on large firms than small ones. That would cause large firms to sell some of their land-holdings to smaller firms that use land more intensively. One of Gaffney's main points in this essay, however, is that reduced taxes on labor have a similar effect by encouraging higher turnover of capital per unit of land and labor, thereby creating an economic advantage for firms that are relatively small and labor-intensive."
40. **^**Erik Eckholm, Losing Ground (New York: WW Norton, 1976), p 109. The story is derived from an account by John Woodward Thomas, "Employment Creating Public Works Programs: Observations on the Political and Social Dimensions," in Edgar O. Edwards, ed., Employment in Developing Nations (New York: Columbia University Press, 1974), p. 307.
41. **^**The last term is an acronym for "There ain't no such thing as a free lunch."
42. **^**From Herman Daly and Kenneth N. Townsend. 1993. Valuing the Earth: Economics, Ecology, Ethics. Cambridge, Mass.: MIT Press. p.1. The reference to Tinbergen is Jan Tinbergen. 1952. On the Theory of Economic Policy, Amsterdam: North Holland Press.
43. **^**Herman Daly. 1991. Towards an Environmental Macroeconomics, Land Economics. May. Vol. 67, No. 2, pp. 257-258.
44. **^**Perhaps this subdivided world would make sense if reality were comprised of "windowless monads" (as Leibniz proposed) or if reality operated according to the disjointed empiricism of Hume or the Ding-an-sich presupposition of Kant, but in the Whiteheadian worldview of organic inter-connections, which was the leitmotif of For the Common Good, that sort of splintering of reality is problematic.
45. **^**Inge Ropke. 2005. Trends in the development of ecological economics from the late 1980s to the early 2000s Ecological Economics 55: 267.

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