

**A View from the “Anti-Global” South:
On Poverty, Global Warming, and the Illusion of Creating Wealth**

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ABSTRACT: The author examines the relationship between global warming and the poverty prevailing today in the global South, relating both problems to an illusion or “myth” that is the central pillar supporting the dominant “culture of consumption” in the North. Affluent people widely share a world-view that, he argues, is based on an illusion--the idea that people create material wealth--and they thoroughly confuse the properties of two very different things in their minds: productive capital and finance capital. The world economy and its recent “growth”, being based almost entirely on the consumption of nonrenewable resources and fossil fuels, form a largely closed system that, as such, is governed by the First and Second Laws of Thermodynamics. Poverty and global warming are thus inevitable outcomes of affluence and economic “growth” as we have chosen to define and measure them historically. This “closed system” view, he argues, and the corollary position that economic growth is in reality destructive, are paradigmatic of the perspective prevailing today in the global South and lying at the heart of the “anti-globalization” movement. Based on empirical research into local economies that are based on this idea of “limited good”, he explores its potential for achieving truly positive and sustainable change.

KEY WORDS: globalization, poverty, global warming, indigenous people

The rapid warming of the earth's climate is undeniable and driven mainly by people's increasing consumption of material goods of all kinds, especially fossil fuels, and is thus a direct result of the kind of growth that economists regard as inherently beneficial to society. The difficulty that many people have in accepting this fact (even Presidents) is alarming yet understandable, since it reflects a widespread confusion about physical reality and a misunderstanding of the laws of nature, which we have been led to believe do not apply to our economic system. Real wealth, which is said to be created by such growth, consists of goods that are finite and scarce: complex forms of matter and energy that are either naturally available as raw materials or are products transformed and manufactured from such materials through technology, human labor, and other inputs of energy (Georgescu-Roegan 1971). Yet many people believe the comforting illusion that such wealth is potentially infinite, created by humans, and that its growth can go on forever, an impossible feat that would violate the laws of thermodynamics². The corrective message that the planet itself, and the poor people of the 'underdeveloped' global South, are now sending through their feedback is clear: economic growth of the kind we have pursued historically is killing us, having become a disease or pathology rather than a remedy or cure.

Due to the poor choice we have made about the "engine" that drives such growth, the process is a destructive rather than creative one, and, as recent developments in the earth sciences have conclusively shown (Bellamy et. al. 2005; Schröter et. al. 2005), it can only continue in its current form for a very short period of time. The basic facts of the matter were discovered long ago in the fields of cosmology and physics; yet most people in the industrialized countries of "the North" and "the West" (i.e., the G8 countries) live in a continual state of denial about them and act on the basis of an opposing set of assumptions. Economic growth, or the increasing production and consumption of energy and material goods per capita, is a practical necessity that has brought about an increase in the quality of life for many of the world's people while accommodating a doubling of the earth's population during the last five decades, demographic growth that could have been avoided or slowed dramatically but that, for purely political reasons, was allowed to take place nonetheless³. The end result is that the majority of the world's people today live in a nearly constant state of hunger and uncertainty, surviving on an income of less than two dollars per day, according to the World Bank (2004; also UNDP 2005).

Few of us would deny that "economic growth" has been necessary and that it has had positive effects for many people, and that some of its benefits have even been enjoyed by us all (e.g., until very recently, a significant increase in overall life expectancy worldwide). But its negative effects are just as evident and are becoming more alarming every day, as we witness a continuing series of "natural" catastrophes such as Hurricane Katrina, many of which are clearly attributable to human-induced global warming. These environmental disturbances, and the shocking poverty of the people who seem to be hit by them most frequently, or at least who are most vulnerable to them, are simply another confirmation of the fact that, from a scientific and materialistic point-of-view, economic "growth" is actually

destructive and has enormous costs, many of which have remained hidden from people in the global North until now. That essential destructiveness, I would argue, has long been the main point of contention between “Northern” (or “Western”) and “Southern” points-of-view, a gap between two opposed cultural perspectives or ideologies that now show promising signs of converging, producing new possibilities for political action and positive change.

Global warming and seemingly endemic poverty have become obvious threats to our existence, even to people in the North, but the widespread inability to recognize their common origin expresses people’s natural aversion to seeing a basic contradiction when it has become central to their lives. The idea that the growing demand for, production, and consumption of material goods is inherently beneficial for everyone, a genuine ‘public good’, must surely rank as the greatest smoke-and-mirrors trick of all time. Here we confuse real material wealth with another form often called ‘virtual’ wealth or “finance capital”, which we do create but whose value is mainly symbolic and to a large extent illusory, since it merely represents the potential for a future exchange. Furthermore, we mistakenly attribute a basic property of this ‘virtual’ wealth to the real thing, thoroughly confusing the two forms in our minds. This error in turn gives rise to a set of secular myths or fictions that strongly encourage steadily increasing consumption and make futile our current effort--sincere enough on many people’s part and becoming more urgent every day--to find a truly just and sustainable way of living together through exchanging one kind of good or service for another.

We in the global North have built our entire way of life around an illusion, and even mortgaged our own future upon it as well as our children’s, to say nothing of the collective fate we have brought upon most of the people in the global South. Thus building a new economy on a different foundation will not be easy, especially now that the idea of economic growth as a creative process has spread throughout so much of the world. But it is high time we got rid of the notion, and that we *can* do, thereby making a start. Fortunately, a great many people seem to have seen through the conjuring trick all along, especially the indigenous people and peasants of the so-called Fourth World--e.g., the Zapatistas of Mexico and the Quechua and Aymara peoples of Ecuador, Peru and Bolivia—who are angrily rejecting the conventional growth model of development, who form the heart of the “anti-globalization” movement that now unites much of the population of South America, and who seem determined to show us the error of our ways.

Anthropologists, although they have had plenty to say about the cultural impacts of globalization, have for the most part been strangely silent on the real substance of this matter, when they would seem to be among the best-prepared people in the world to speak out about it in an insightful and constructive way⁴. The anti-globalization movement, I would assert, is not about contested identities and notions of the Self; it does not really reflect questions of how people *feel* about the world, but rather of how the world *is*, how people see it and how it really works in a material sense. The movement is indeed a phenomenon of class formation, the emergence of a “transnational anti-capitalist class”, which does have significant ethnic elements and factions, but according to my experience the people most involved in the ongoing struggle in the streets have little time or inclination to sit

around reflecting on who they are, other than human beings with certain basic rights, and how they may differ culturally from those around them. They can and will do that when it is to their political advantage, but always as part of a larger strategy in which the stakes are much higher than “identity”. Identity is important, but it only becomes deadly important when it is about rights to material resources upon which people’s lives depend.

The argument I will present here and the evidence to be discussed below are meant, like many other recent statements (Korten 1995; Barkin 1998; Chomsky 1999; Brecher, Costello and Smith 2000; Veltmayer and O’Malley 2001; Bircham and Charlton 2002 ; Escobar, Sen and Waterman 2003; Callinicos 2003), to support that growing popular movement and encourage the aforementioned convergence of opposed cultural understandings of how the world works. The analysis makes it clear that several steps must be taken very quickly if we are to act in our own collective self-interest, slow down global warming, and move proactively toward achieving a more just and sustainable global economy. The necessary changes now seem relatively easy to justify scientifically, and, as we will see, there is also plenty of historical precedent suggesting that we can actually make them.

First, we must dispense with the illusion that people create material wealth by distinguishing clearly between the properties of real wealth and those of virtual wealth, i.e., those of loaned money and finance capital. The capacity of the latter to multiply itself seemingly endlessly as if by magic is not natural but wholly artificial, a power that was granted to the owners of such capital long ago through a political decision that was seen as highly controversial at the time. As such, it is a decision that, at least theoretically, could be changed in any way that a majority of the world’s people see fit. Since most people seem to be unaware of this history today, revealing it may help put an end to our widespread confusion of the two kinds of “capital” and open up new possibilities for change.

Second, we must look closely at the amount of virtual wealth existing in the world economy today (i.e., “finance capital”), as compared to the amount of real wealth (i.e., “natural capital” and “productive capital”), a ratio that, from both a logical and a scientific point-of-view, is highly distorted and dangerously skewed in terms of the system’s ability to maintain stability and a reasonable degree of predictability. Recent developments in the environmental sciences make it possible to compare the current figures on both kinds of “wealth” with estimates that have been made for the economic value of the ecosystem services that the natural environment and the earth itself provide us with every year, upon which our survival and all our economic activity of course depend. The comparison does not bode well, and it suggests that we must now re-impose some kinds of limits to regulate the international flow of virtual wealth, controls that most countries in fact had in place right up until the 1980’s (George 2000; O’Hara 2004). Again, a political decision was made at the time that, although largely overlooked or forgotten by many, has proven to have destabilizing, potentially even catastrophic, consequences, but that decision can theoretically be changed if not reversed.

Third, based on these rough approximations, we must begin a serious effort to determine the carrying capacity of the global economy in terms of the amount of finance capital the system can afford to maintain in the long run, a quantity that

assumedly should bear some relation to the total size of the human population and the amount of carbon dioxide emissions that we can collectively afford to produce on a daily basis, and then set appropriate and enforceable limits. I would argue that at some point upper limits will also have to be set, through a combination of voluntary and mandatory action, on the total amount of capital (both real and virtual) that an individual can accumulate and/or consume in a given year, a more personal point-of-view to which we will return but that need not detain us for very long.

Obviously, achieving a ratifiable and enforceable agreement on the setting of such limits at a global level will be a daunting task. But it has been well demonstrated empirically, numerous times in a great many places throughout the world, that people are capable of taking such collective action and achieving mutual self-restraint when they are faced with the very kind of threat we are confronting today at a planetary level. This encouraging news, although not yet widely known, arises partly from comparative research on irrigation and the management of water, the most vital natural resource, in situations where local people have been forced to share a scarcity of this most basic form of material wealth. My purpose here is to provide an overview of all of these points and pursue some of their theoretical and policy implications, all of which affirm the “anti-globalization” perspective and lend strong support to the demands for socioeconomic and political sovereignty now being made by indigenous people and peasants and, increasingly, by the general public in South America and other parts of the ‘developing’ world.

The basic facts of production, consumption, and “wealth creation”⁵

Any natural scientist understands, at least intuitively, that people do not create material wealth but rather degrade it despite their best and most creative efforts, knowing full well that human beings and modern society, like all other forms of life, are subject to the First and Second Laws of Thermodynamics. Matter and energy are neither created nor destroyed but merely transformed from one state into another, a process that leads in only one direction, toward the steady buildup of heat, waste, and disorder or “entropy” in the universe. Anthropologists have of course long been familiar with these laws, but attempts to use them in the discipline and explore their theoretical and practical implications have lately fallen out of favor, after showing a promising start (White 1943; Adams 1975; also see Georgescu-Roegan 1971; Prigogine 1976). The laws are sometimes spoken of, metaphorically, as defining “the arrow of time”, a grand narrative that, despite rather presumptuous assertions that all such narratives are now “dead” (Nietzsche 1954; Rorty 1989), science tells us is ultimately the story of the cosmos. Even though they were initially formulated as a set of statements about the evolution of the universe, by definition a closed system, these laws are nevertheless true absolutely and in some sense they hold for all times and all places, especially for a fossil-fuel-addicted place like the planet earth. There can be no doubt that they govern all closed systems, and, in choosing to be almost completely dependent on

nonrenewable forms of energy like petroleum and other fossil fuels--even in growing most of our food today world-wide--we have effectively created a closed global economic system.

The planet, of course, is technically open and merely bounded; but since the only significant things crossing its atmospheric boundary are solar energy and other forms of electromagnetic radiation, the system is otherwise closed. In order to see how the physical world and the economy operate more clearly from a thermodynamic point-of-view, we must examine the properties of finance capital, a kind of wealth that is artificial and that we have created in great abundance, distinguishing it from real wealth and putting an end to our confusion of the two forms. That error has deliberately been encouraged and manipulated by a "transnational" class of extremely wealthy capitalists who profit from it at our expense (Sklair 2000), but we can no longer afford to be hoodwinked by the owners of a form of "capital" whose profligate, speculative logic has taken over our economy and our culture, making it a "culture of consumption", and increasingly come to dominate our uncertain lives, even in the affluent North.

Finance capital is best thought of as a kind of potential or virtual wealth (Kautsky 1911; Hilferding 1920), which basically embodies the opportunity, capacity or obligation to carry out a future exchange, one whose real material value is undefined and not yet known until that final transaction is actually completed. Being forms of credit, indebtedness, or value potential ("buying power" is another good way to think of them), the different kinds of finance capital, when loaned, borrowed or purchased, all in effect trade upon our future, transferring part of it or spending it up in advance. Although some forms are absolutely essential for running the capitalist economy (loans and investments such as stocks and bonds), their unfortunate side-effect has been to cloud our understanding of how the global system works while propagating certain secular myths that have become central fictions supporting the culture of consumption. These include such neo-liberal notions as "a rising tide lifts all boats" (tides, of course, go down as well as up, and you cannot have one without the other), or the idea that we can all somehow become rich in a world potentially consisting entirely of winners with no losers. All such fictions are based on the idea that material wealth is created by people, "from scratch" as it were, so that our individual decisions about accumulating it or consuming it appear not to have any "third-party effects," any costs that are borne by someone else. People in South America and the rest of the 'developing' world, based on their historical experience, know different.

Our confusion about all this, and the global crises that we are now facing as a result, are consequences of a pivotal and very controversial political decision that was made early in the 16th century (Hyde 1983:122-140). Beginning with the decision to legalize usury, the charging of fixed-rate interest on monetary loans (endorsed initially by Luther and later Calvin during the Protestant Reformation, which forced the Pope and the leaders of the Catholic Church to follow suit), a number of financial "instruments" were ultimately created, all of which were intended to facilitate transfers of real wealth and encourage economic activity, partly by providing the owners of such "capital" with a degree of protection from risk. All were catalysts invented to facilitate the investment of material wealth,

initially for the production and/or transport of material goods, which they did quite well. But they were derived from the unique capacity that money was suddenly given to multiply itself as if by magic, without its possessor running any significant risk or doing any work other than that involved in lending it temporarily to someone else.

Initially, the amount of interest endorsed by the churches and allowed by the emerging secular European states through their banks was strictly limited (to 5%). But such constraints on the creation and use of finance capital were then steadily reduced and even eliminated as time went on within the emerging global system. Such loans, of course, generally have to be guaranteed with an item of real material wealth of known value, such as a piece of real estate or other private property, which can be confiscated by the lender if the loan repayments are not made. The value of all the “virtual wealth” generated through such lending practices ever since the political decision was made has thus rested on this material foundation, and such finance capital or value potential would not exist today without it. Any massive shakeout or collapse in the global economy, such as the Asian financial crisis of the late 1990’s, or the somewhat smaller debt debacles in Mexico, Argentina and Brazil, must necessarily be followed by a massive transfer somewhere of real material wealth, since the accumulation and investment of the lost virtual wealth was underwritten by real assets or real resources. Who, then, has historically paid the tab for the bad and highly speculative investments made by investment banks and big capital, which brought about such financial chaos? People in South America know the answer, for the most part, while most people in the North, it would seem, do not and cannot even recognize the very real impact it has had on their lives⁶. They are simply blind, for understandable reasons, to the way the world really works.

To illustrate another basic feature of finance capital and show how the sleight-of-hand of wealth creation works, say that someone takes out a loan of \$1,000 from a bank. That interest-bearing debt will remain in the bank of origin, while the “real” capital of \$1,000, if spent as a unit on some kind of investment or consumption, will ultimately end up deposited in another bank, which can then lend that same money *again* at interest, and so on and so on and so on, ultimately generating a huge amount of potential or virtual wealth, all bearing interest. In the US, regulations restrict the amount of the initial loan that can be re-loaned to roughly 90% or \$900, which means that every \$1,000 borrowed in the country today soon multiplies into \$10,000 of total credit, debt and investment (Korten 1995:190-191), *and* usually in some degree of real-wealth transfer and/or consumption. But in many countries there are no such restrictions, particularly in the relatively new “off-shore” centers of finance, so that the amount of self-reproducing virtual wealth thus created is potentially limitless. The interest payments and the payments on the principal, meanwhile, are either paid through the expenditure of the borrower’s own personal labor and the wages that come from this, or, if the loan is invested in some kind of business enterprise, it is paid largely with the profit gained through someone else’s effort and physical and/or mental work.

Prior to the decision to allow this kind of activity and permit the charging of interest on loans, most of the world's people and most of its great religions had considered such practices to be exploitative and inherently sinful. The Christian bible, of course, emphatically supports this moral view, as does the Jewish Torah, and some of the clearest statements and gestures attributed to Jesus in the New Testament further strengthen this judgment rather than weaken it. The creation of such 'virtual' wealth continued to be widely seen as morally problematic thereafter, as it still is today, particularly by Muslims, as constituting a kind of social violence or even symbolic warfare, often as involving people in a kind of Faustian pact with the devil (Taussig 1980; Hyde 1983). The history of capitalism has since shown that, given all the confusion and the excessive consumption that such virtual wealth has ultimately fostered, and its ever more obvious environmental and social costs, this was to some extent an accurate prediction expressing a not-unreasonable fear about the future.

Finance capital has multiplied exponentially during the last few decades as it has been almost entirely freed of all regulation, taking on some new and very obscure forms, and it has now come to dwarf the economy of real wealth or productive capital, today being nearly four times as large (Bond 2004; IMF 2004). This is because it accelerated enormously the production, circulation, and consumption of real wealth, as intended, by funding investment, while feeding off that economy and yet concealing the speculative and predatory dynamics of what are in fact two separate but interdependent systems of exchange. Unfortunately, computers, instantaneous communication, and worldwide software-generated transactions have done the same and even added to the veil of mystery and confusion. They have made the financial sector increasingly autonomous in terms of regulation and steadily less accountable, thereby pushing the global exchange system into overdrive and destabilizing it (Soros 1997, 2002; Radelet and Sachs 1999; Rubin 2004; Bond 2004), plunging us all headlong into periodic financial crises of our own making.

The illusion of creating wealth thus became a kind of reality long ago; but it remains a conjuring trick based mainly on imagined or potential values and the continual re-lending of previously-loaned money, all underwritten by the real wealth and the labor of real people, in a kind of pyramid scheme. The generation and accumulation of such virtual wealth, and the periodic crises that eventually result, are of course driven mainly by human foolishness and greed. For those of us who are heavily in debt, we contribute to this false "growth" by living on credit beyond our means, or, if we are citizens of the United States, by allowing our government to run up historically unprecedented budget deficits on our behalf, often to wage illegal wars. Those of us who are fortunate enough not to be in debt are of course the money-lenders; they drive the process by continuing to demand and accumulate more and more money, typically by investing it in hedge funds and other highly speculative financial "instruments" (which are quite new and poorly understood), rather than in real production (Bello, Malhotra, Bullard and Mezzera 2000; O'Hara 2004; Bond 2004), and by going far beyond any reasonable state of human need.

Every day, two trillion dollars of finance capital (2,000 billion dollars of stocks, bonds, currency, futures, etc.) are traded speculatively on the global market by banks, corporations and individuals, in a total financial market now valued at roughly 124 trillion dollars, according to the International Monetary Fund (Bond 2004:40; IMF 2004). The trade in goods and services, on the other hand, the economy of real wealth or productive capital whose movement is measured by the global GDP, is estimated at roughly 36 trillion dollars worth of exchanges per year, or only about 22% of the total economic assets existing today, a percentage that has decreased slowly during this century but shrunk very rapidly as finance capital has been deregulated worldwide during the last three decades. Inevitably, the bubble of bogus value must burst periodically as a result of this speculative and largely imaginary growth, as the global housing market and even the value of the dollar threaten to do today, taking the real economy down with it (Radelet and Sachs 1999; Perez 2003; Bond 2004).

Real wealth, upon whose circulation and consumption the seemingly autonomous world of finance capitalism actually rests (for example, in the form of the collateral on the loans) consists of earthly forms of matter and energy that are finite and thus subject to nature's laws: raw materials, natural resources, human labor, and energy (both renewable and fossil forms), as well as the material artifacts, tools, and goods that people produce through manufacturing and the use of technology (Georgescu-Roegan 1971). Services, on the other hand, or human labor in the many forms that it takes, have exchange value or wealth potential (inherently also possessing what economists call "use value"), since they can be exchanged for and converted into real wealth through the medium of money. But they too are limited in availability and, in a closed global system where petroleum literally drives almost everything that grows or moves—at least in the urban parts of the world where most of the human population now lives—are subject to those same laws. In such an economic world, real wealth, being material rather than just symbolic, is either consumed, transformed, or transferred from one person or place to another, and is by definition scarce and ultimately limited in terms of supply

Regardless of what we do to it in our fascination with it, *we do not and cannot create that wealth but only transfer, transform and/or consume it, thereby reducing and degrading the total planetary stock into a less-ordered form.* Inevitably, with a growing population and a primary dependence on fossil fuels, we contribute to an accelerating buildup of heat, waste and disorder on the planet, the evidence of which is all around us but which is manifested most directly in the two biggest problems we now face. The idea that we create, rather than merely transform and transfer, material wealth is thus, in practical terms, an illusion. The "structurally-adjusted" and permanently poor people of South America know this all too well, the people who actually pay, with their daily labor and their diminished hopes for the future, the interest on loans that were taken out decades ago in their name (Toussaint 2003), either for failed 'development' projects or, just as commonly, for armaments that were later used against them (in either case the loans were usually taken out by dictators). In any case, the more we squander such limited wealth and the more of the world's resources we buy up and consume in our individual lives, the faster the decline and the bigger and more disruptive of

our lives the problems of poverty and global warming will become. This, rather than the fictions of wealth creation, the rising economic “tide”, and the self-regulating “market”, is what science shows us.

Here in the West we live under the illusion that we are exempt from nature’s laws and somehow able to reverse time’s arrow, when in fact we are doing almost everything we can at a planetary level to speed the buildup of disorder, waste, heat, and the social and political chaos that result, through endless “growth.” People actually create nothing but new ideas, new forms of organization and representation, new kinds of services, new processes of production and industrial transformation (and thus new products), and of course more people. All of these seemingly ‘creative’ activities require raw materials and energy and, due to our poor choice and squandering of scarce or finite supplies, most of them ultimately consume or degrade far more matter and energy than they produce. The main material input for all this is of course petroleum and its many byproducts, which again illustrates the closed nature of the current global system.

In the 1990’s it was estimated that, whereas only 25% of the retail price of an average ‘good’ purchased in the market went to pay for the raw materials and energy that went into its production (including labor), a full 75% of the money on average went to pay for packaging, marketing and marketing-support functions such as transport, and of course to profit (Korten 1995:128). Nowadays, in an economy where cheap bouquets of flowers are flown across the Atlantic every night to appear on European dining tables by the following evening, one does not have to think very hard to realize that the vast majority of this after-profit cost goes to pay for petroleum. Indeed, in a very real sense, that petroleum cost is clearly now the main “overhead”--largely disregarded in the general accounting by economists--for the entire global system for the production and exchange of real wealth, including the daily labor of those of us who work in the “service sector”. Thus, in deciding what to purchase and consume on a daily basis, we might just as well think of countless other equivalents rather than speak as we do now--at least in the UK and elsewhere in Europe--of calculating our “food miles”. Such everyday consumption of all kinds of consumer goods and the petroleum that underwrites it has had the effect of gradually destroying the ecosystems and restorative functions upon which our survival depends, reducing the planet’s ability to cleanse and renew the atmosphere, the soil, and ultimately to sustain life (Costanza et. al 1997; UNMEA 2005). These, among others, are the direct effects of our conspicuous production and consumption, the hidden or ‘externalized’ costs

Agribusiness, strangely enough, provides the clearest illustration of how all of this works, in which we derive spectacular yields per acre by virtually pumping petroleum products into the ground (chemical fertilizers, insecticides, tractor fuel), while rapidly eroding the topsoil and effectively mining both it and the groundwater stored in underlying aquifers. From a scientific point-of-view, such production-through-destruction is quite emblematic of what we think of as economic “growth”: agribusiness’s overall efficiency, its input-to-output ratio, is appalling, roughly 3 to 1 (Pimentel 1993). This is not to say that such growth should not have happened or somehow could have been avoided, because of course we have to feed, clothe and house ourselves, and growth in material output and consumption has been

necessary in the face of the doubling of the global population that has been allowed to take place over the last fifty years. Such necessary growth could only be achieved through credit and investment, which are ultimately means of redistributing real wealth—land, water, labor, raw materials, and energy—combining those limited resources in new ways and putting them to new uses. My point is simply that such growth is not sustainable, as we all now fully understand, and that it could have been handled with much more caution, humility, and foresight, and with far less greed.

Approximately 70% of the total growth in labor productivity witnessed during the last fifty years has taken place in the 30 % of economic activity accounted for by the industries most closely linked to, and most reliant on, petroleum, of which agribusiness is just one example (Korten 1995:37-38). This figure probably vastly underestimates the true magnitude of the nonrenewable energy dependence (to say nothing of raw materials), since the great majority of workers in all sectors of the US and world economies rely heavily on petroleum and petroleum products not only to get to work but to subsist and survive on a daily basis. Thus the steadily increasing consumption of oil could be said to have underwritten virtually all the much-touted increases in labor productivity in the US and other parts of the North over the last few decades. This means, of course, that the die is to some extent already cast, and the future will ultimately take us in the general direction that those earlier decisions lead.

It can therefore be argued, looking back now over the last two centuries of human history, that the processes of technological innovation, production, and consumption have on the whole been more destructive than creative, when viewed against their full impact—environmental, economic, social, and cultural—as well as their total energy cost. That they have added to the buildup of disorder or entropy on the planet was inevitable, as the laws of thermodynamics reveal; the question here is merely one of rate and degree. To put it another way, time is an arrow that flies in one direction, ultimately toward the dissipation of energy and gradual destruction—that is the challenge that physical reality and “fate” have posed to us as human beings—but how fast it flies is, to a great extent, up to us, a sobering fact that should certainly give us pause.

Clearly this decision should not all come down to a kind of casino game, a big but exclusive one played by the very rich and driven almost entirely by their greed. In a sense it is, but the game is also one that most of us “buy into” and support hegemonically⁷ by living beyond our means or aspiring continually to have more and more goods and to enjoy “the good life”, whose faddish trappings are of course forever changing, or even to become rich. To take the analogy further, it would definitely be a different game without our active involvement and support, if we simply refused to see it any longer as the only game in town. Therein lies the potential power that we have to influence the world through the financial markets, to shape the group decision that is being made daily on our behalf in the global “futures trade”. Our power, and our obligation to poor people throughout the world and to coming generations, lies in how we choose to live our own lives, in how much of the future we decide to consume every day, even in the act of producing.

Here in the West we clearly must recognize “affluence”, the supposedly steady improvement in our quality of life, for what it is and acknowledge its true cost, if we are to steer away from where its perpetual increase is taking us. Our wellbeing is generally measured and defined by economists as the increasing per-capita consumption of goods, of real wealth, a process that, as Stiglitz (2002)⁸ and many others have clearly shown, is only taking place in certain parts of the world and among certain privileged classes of people. If this phenomenon were truly creative, it would not have led to the most wildly skewed distribution of income and resources the world has ever seen, where a staggering amount of ‘wealth’ (both real and virtual) is concentrated in so few hands that the per-capita distribution cannot even be represented visually on a single page in a simple two-axis graph. And the distribution is steadily getting worse.

To correct this imbalance, and to compensate for the mistakes from which we in the developed countries have profited from so heavily in the past⁹, we could now forgive unconditionally the foreign debt of the ‘developing’ countries and carry out a massive redistribution of wealth that actually flows from the top downward or from the center to the periphery, rather than the reverse, as so-called “foreign aid” has always done in the past. Again, this is something that people in the global South understand perfectly well but people in the North generally do not—that the vast majority of the money supposedly given to other countries as “foreign aid” in the past never actually left its country of origin, since it had to be spent, for example, in the U.S and benefit American contractors and firms. Second, we can spend our remaining natural resources and nonrenewable energy forms more equitably and cooperatively while turning to renewable ones instead, making the best of a situation that, although extremely urgent, is not entirely bad. Technology can and must play a crucial role in this, allowing us to take advantage of a “market opportunity” that is arguably unique in human history: to carry out what amounts to a Second Industrial Revolution (UNMEA 2005).

Science and industry must join forces and ensure that the global economy converts *as quickly as possible* to the harnessing of solar, wind, geothermal and other renewable forms of energy, in effect opening up our now-closed planetary system. Here we simply have no other choice; without this major change of focus, technology will not save us from our fate but only further accelerate the decline. “Freeing-up” the global market and increasing trade and economic “growth” (i.e., increasing global production and consumption), the more-of-the-same recipe now being held up as the cure for the plight of Africa and for world poverty in general, will do precisely the same thing (Barkin 1998; Brecher, Costello and Smith 2000; Veltmayer and O’Malley 2001). Instead, a simple goal could serve as our long-term guide. International “shares” of, or permits for, fossil fuel consumption and carbon dioxide emissions must be made to contract and converge gradually, but fairly quickly, on a single target of equal emissions per capita throughout the entire world (Meyer 2001), as an average at the national level in each case¹⁰. This admittedly would be no small feat, but it is a target that, much evidence suggests, can in fact be achieved.

A simple corollary to the one fundamental and undeniable truth about the world—the fact that we do not create material wealth—provides an indication of

where such insights into economic life can take us. Here I refer to a very old concept that, in the discipline of anthropology, is known as the “idea of limited good” (Foster 1965); it is said to be basic to the worldview of peasants, who still comprise at least a third of the world’s population. I might add that, from the look of things that are happening today in Central and South America, most indigenous people and peasants seem to have held on to this worldview in spite of everything and, if they were ever fooled by the false magic of wealth creation (which is really a wealth transfer), they have now let go of the illusion in a hurry. The willingness of poor people and peasants in Bolivia to die in the streets of Cochabamba and La Paz during the recent “water wars” confirms this, as does the political crisis that has resulted from the firm and non-negotiable “No!” of people throughout the Andes to yet more neo-liberal World Bank policies for resource privatization.

According to this traditional “peasant” understanding, once thought to be quaint and based on ignorance, or on purely local scarcities of resources, there is only a limited amount of ‘good’ in the world (or “goods”). Life is therefore a zero-sum game in which one person’s gain, or one country’s, is almost always another’s loss. Thus, whatever I, for example, acquire and consume in the way of goods comes, with very few exceptions, at the expense of someone else and denies them of that same chance. It always has a hidden cost, and indeed it does as we saw earlier, both in terms of the entropy or disorder it produces and in terms of the consumption of non-renewable resources, the opportunity for that which it deprives other people of. This is something that peasants and poor people in the heavily indebted nations of the global South have long understood, for reasons that are not at all obscure.

The academic version of this general way of seeing the world, known as “dependency theory”, originated in Latin America and, despite rumors to the contrary, it is alive and well in the region today. In essence, the scholarly version of the argument has always focused on the historically-created structural position of ‘underdeveloped’ countries at the periphery of the world system and the resulting “unequal terms of exchange”, which have supposedly functioned to keep wealth and capital flowing mainly out of the periphery and accumulating in the core: the perennial problem mentioned above, which World Bank personnel speak of as the ubiquitous “net negative transfers”. The essence of the argument has always been that the “game” is fixed, the deck “stacked”, and the net sum zero or winner-take-all, since the vast majority of the profits that result from the investment of foreign capital in a given country are ultimately exported by local elites (the only real local beneficiaries) into foreign or offshore bank accounts or, much more massively, repatriated by elite capitalists in the center.

Nearly all of the recent critiques of globalization coming out of political economy lend support to this view in terms of their gloomy prediction of no significant structural movement, and no substantial economic improvement, for most of the countries of the global South. They agree that, if global capital does begin to accumulate again somewhere and concentrate itself geographically in a new center (Arrighi 1994), which may in fact happen (Perez 2002); it will definitely not be in Africa or in Latin America (Petras and Veltmayer 2001). This will remain true, even if Hernando de Soto (2000) succeeds in registering all the “dead” capital

of the slums and shantytowns of Lima and other Third World capitals and thereby turning it magically into real “living” capital by making it suitable for use as collateral for monetary loans. Unfortunately, since there is no such mysterious magic of capital, other than the sleight-of-hand trick described above, we have no reason to think that such loans will be forthcoming (Clift 2003).

Perhaps the most significant of the recent re-analyses of dependency theory is that of Surin (2005). Like that of Petras and Veltmayer (2001) and Perez (2002), his work focuses primarily on global movements of finance capital, rather than just those of productive capital (i.e., real wealth) as the early and classic formulations of Cardoso, Frank, Petras and Amin typically did. Surin’s analysis reveals an even greater degree of polarization within the global system than the original version, with finance capital penetrating slowly and very selectively into the peripheral countries, now being by far the predominant form of capital as a percentage of total Direct Foreign Investment (FDI) in each case. Worse still, this foreign virtual wealth is being invested speculatively in hedge funds and derivatives for the most part, rather than in any real facilities for production, and it is actually “crowding out” or competitively discouraging the investment of domestic capital in all countries except for a few favored nations in Asia, those that have not had to follow the orthodox policies imposed by the Washington consensus in the past.

The view reached by all the newer versions of dependency theory is that the countries of the South have no prospects for advancement in the current system, that the capital accumulation now taking place in the world is slow and getting slower but nevertheless occurring at the ‘developing’ countries’ expense, and that governments in the region should “decouple” their economies to the extent that this is possible and move toward a more self-sufficient strategy for economic development (Taylor 1991; Barkin 1998; Bello, Malhotra, Bullard and Mezzera 2000; Veltmayer and O’Malley 2001; Bond 2004). Many South Americans will be struck by the fact that this is precisely the kind of “economic nationalist” policy that was pursued by governments throughout the continent and the rest of Latin America during the 1950’s and 1960’s, by infamous leaders such as Allende, Velasco, Roldos, Torrijos and others, until they were assassinated and removed from power, with U.S. support, during the 1970’s.

It has now become clear that the idea of “limited good” is quite valid when applied to nonrenewable resources, and that it certainly holds true for fossil fuels, particularly when we take our own children and future generations into account. But it also applies to a reasonably stable and hospitable climate and a breathable atmosphere, and not just for people in the global South. I would suggest that, at this pivotal moment in history, we extend this profound insight to the rest of the world economy, whose basic dynamics it accurately describes. The world, the real material wealth that it contains, and ultimately its future, are not only limited but are what we refer to as a “commons”, ultimately belonging to us all. It is time to start thinking seriously about how human society should be compensated when we use up or dissipate part of that potential, or about how we might curtail our profligate spending, lending, accumulation, and consumption, especially our consumption of fossil fuels and, above all, our creation of virtual wealth. I have already mentioned some of the forms that such compensatory and redistributive action might take,

such as upper limits on consumption and individual accumulation. I think that most scientists, and perhaps even now many economists, would agree that human reason and historical circumstances demand that some steps now be taken in that general direction.

In a thermodynamic world, the steady accumulation and consumption of wealth by the few lead to increasing poverty and misery for the many, as well as to environmental destruction and the accelerating warming of the planet for us all, a fate from which none of us can escape except through collective action. These two threats to our existence are products of the same illusory and destructive process of “growth”, as we have chosen to define and measure it, just as surely as affluence and poverty are two sides of the same coin. The hidden cost of our growth and our conspicuous consumption consists of the “entropy” that results--the disorder, material waste, and heat--as well as the opportunity for life-quality enhancement that we deny to other people and to future generations. Lately, scientists have made a serious effort toward enabling us to quantify a part of the entropy cost, beginning by estimating the total economic value of the life-sustaining ecosystem functions that the earth provides each year (Constanza et. al. 1997, UNMAE 2005), which are rapidly being “drawn-down” or lost as the global economy grows. That value was appraised in 1997 at 33 trillion dollars per year, or roughly twice the worth of global GNP, or the amount of “real capital” (including all goods and services) being circulated through the economy (roughly 18 trillion dollars at that time). Although such calculations are far from accurate and intended only to help us attain some kind of realistic perspective, the total amount of virtual wealth or finance capital existing at that time, in contrast, had an estimated worth nearly four times as great as the global GNP and almost twice the estimated value of the services provided by the living earth itself.

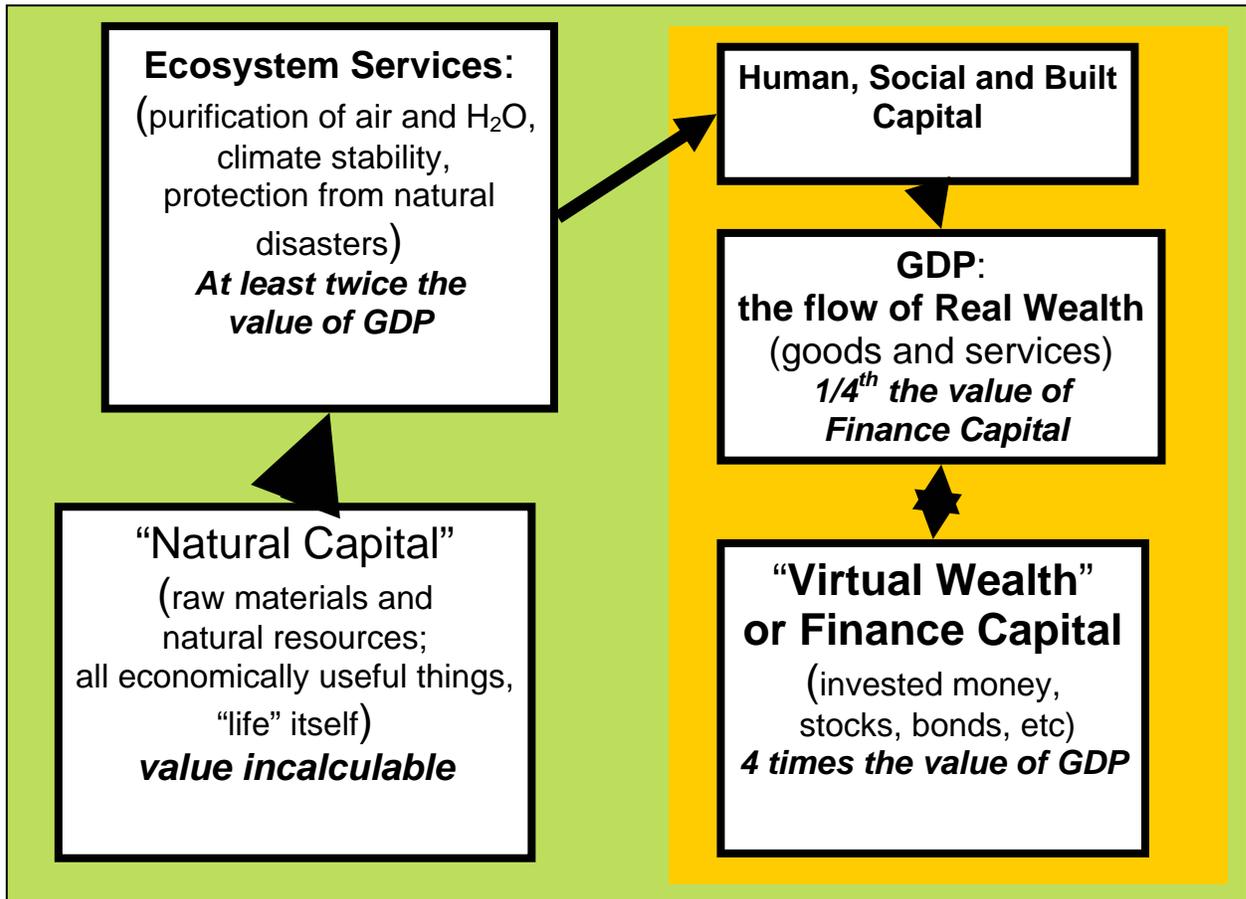
There is clearly something seriously wrong with an economic system where this kind of financial wizardry is allowed happen without any effective restraint. The global economy must have a definable “carrying capacity” for the creation of virtual wealth, an upper limit that we can probably calculate with enough precision to allow it to serve as a useful benchmark and guide for policy-makers in regulating the global financial system. Since investments of finance capital directly drive commercial production and consumption, being necessary for it, one could argue logically that finance capital should never be allowed to grow several times larger than the estimated value of the “natural capital” upon which all such economic activity, and even human life itself, depend. One could also argue, logically, that the loop of wealth circulation must finally be made to close, so that finance capital (which now really functions as a kind of “sink” of artificial or imaginary value) is invested massively and rapidly in the maintenance and even the restoration of the earth’s vital ecosystems, as well as in the development of renewable energy technology (see Figure 1).

This, it would seem, is a feasible way out of our current predicament, in which the dynamics of finance capitalism are poorly understood and not predictable with any degree of precision, and yet are known to precipitate with increasing regularity global economic crises that produce human suffering and hardship on an incalculable scale (Soros 1997; Radelet and Sachs 1999; Perez

2002; Bond 2004; Pollin 2005). Until now, the ad hoc manner of dealing with these financial crises has been for the IMF and the G8 countries to “bail out” and further enrich the big investors who precipitate the crises in the first place through their speculative investment and their subsequent greed-driven panicky withdrawal of capital, rewarding them with public funds transferred to them in the name of the common good. This, of course, has created a situation in which, no matter what it does, big capital literally cannot lose in the globalization game. It clearly cannot be allowed to continue.

If people realize that the creation of finance capital is a truly artificial process--a power given to banks and big investors through a political decision, rather than something “natural”—as well as a destructive one, the political will to make these and other positive changes may well emerge. Based on everything I have learned as an anthropologist studying collective-choice decisions in the management of natural resources, this is my hypothesis and prediction, and it is one that can be tested. Much of the over-consumption and just plain greed that people now display so widely is predicated on the assumption that, as we are constantly told, by accumulating more we and spending more we are somehow helping everyone else rather than exploiting them and profiting at poor people’s

Figure 1: Relations and Relative Magnitudes between Real and ‘Virtual’ Wealth



expense. By changing the way such decisions are framed, we can, I believe, radically change their behavior. We may never be able to calculate the real material and energy cost of our affluent lifestyles with any precision, but clearer thinking about “capital” will certainly help us to become aware of the nature and impact, so that it somehow enters into our calculations about the costs and benefits of our transactions, of our choices and habits of consumption. From a moral point of view, we owe each other at least that much, since we are indeed spending up and trading upon our future.

Historical precedents for mutual restraint and voluntary change

The prospects for such profound change are far less remote than they appear to be at first glance, taking into account some more encouraging and relatively recent news that is coming out of work in the discipline. As my own work and that of a great many other researchers has shown, ordinary people have been facing up to this seemingly grim thermodynamic reality at a local level ever since time immemorial, and have repeatedly shown that they can come up with a workable solution. Contrary to what most economic theory predicts, people are quite capable of sharing a scarcity of real wealth, of dealing with the reality of “limited good”, by acting equitably and cooperatively and cutting back on their accumulation and consumption. They have done this most often in responding to an acknowledged threat or scarcity that jeopardizes their mutual existence, but that of course is exactly the situation we are facing today.

People have accomplished this feat many times in a great many places throughout the world, imposing a set of rules that is mutually agreed upon and mutually enforced for restraining their consumption of even the most scarce and vital resources. The most obvious and familiar example was the unification and reorganization of the entire commercial economy, involving strict rationing of both fuel and food, that the Allies achieved and relied upon in order to win World War II. But a great many other cases have recently been found in one important domain of economic activity, the management of “common-property” resources--especially irrigation water—where local people have done this repeatedly all over the world in situations where their lives and livelihoods depended on it. Again and again, in Peru, Bolivia, Chile, Mexico, Spain, India, Nepal and the Philippines, relatively autonomous communities of farmers--usually indigenous people and peasants--have shown that, in the face of a life-threatening scarcity, they can resolve the supposedly inevitable contradiction between individual self-interest and the common good and share, in a sustainable way, the most vital form of material wealth or “natural capital”: i.e. water. This kind of collective action is an achievement that most policy makers, until very recently, thought to be impossible.

The results of my ethnographic and comparative research strongly suggest that these local solutions to the problem of water scarcity, now well documented in hundreds and even thousands of places throughout the world (see e.g., Glick 1970; Maass and Anderson 1978; Coward 1979; de los Reyes 1980; Siy 1982;

N.R.C. 1986; Bromley 1992; Wade 1986, 1988; McKay and Acheson 1987; Ostrom 1990, 1992, 1998; Tang 1992; Hunt 1992; Treacy 1994a,b; Gelles 1994, 2000; Sengupta 1991; Ostrom and Gardner 1993; Lam 1998; Trawick 2001a,b; Palerm and Martínez 2002), are all essentially the same outcome of a collective agreement. These successful farmer-operated irrigation systems all appear to be based on the principles of *equity* among water rights (and between those rights and accompanying duties) and *transparency* in resource use.

In every documented case of local success, a scarcity of this real wealth is shared and distributed according to the principle of “equity” or fairness, in such a way that no one person is allowed to accumulate so much of it as to jeopardize the rights and the livelihood of everyone else, in a situation where mutual survival and the minimization of social conflict are goals shared by all. Though most of us may have forgotten this, such an upper limit on the accumulation of individual wealth (i.e., on yearly cash income) is exactly what enabled the Allies to finance and win the Second World War, a rule for redistribution that was successfully implemented both in Great Britain and the United States, apparently with little squabbling and very little cheating or “free-riding”. In the case of local irrigation communities, such agreements are possible because everyone can tell whether or not the rules governing the circulation and consumption of ‘wealth’ (i.e., water) are generally being obeyed; the rules are simple and known to everyone and the system itself is fully transparent, generally involving the systematic or unbroken movement of water use through well-defined and contiguous spatial units. Typically, everyone receives water from a given source with the same frequency, so that the scarcity is shared fairly, or, if certain people are able to irrigate more often than everyone else, that opportunity itself becomes available to everyone periodically on a uniform schedule. And duties to give back to the community are proportional to the rights that people derive from living there and using its resources.

This kind of equity and transparency may be difficult to envision on a global scale with regard to the distribution of personal income and resource consumption, but it is by no means impossible to achieve. Indeed, the evidence available from successful irrigation systems of both small and extremely large scales suggests that it may be achievable through a relatively simple set of rules¹¹. In our search for a foundation upon which to attempt an unprecedented feat of global collective action--i.e., to win the fight against over-consumption, poverty and global warming (terrorism, I believe, would diminish greatly as a threat if this were done)--I would suggest that we begin with the many empirical cases and places where such action has actually been achieved, and utilize the basic principles that have repeatedly been tried and tested in achieving positive change.

I am not the first person to suggest this, and many other people are pursuing the theoretical implications of the many examples of successful collective action that we now have (e.g., Ostrom 1990, 1992, 1998; Ostrom et. al. 1999; 2002; Dolsak and Ostrom 2003). Nor am I the first to see the link between poverty and global warming, or to see through the illusion of “growth”. Indeed, as I have said, these insights seem to be shared by the majority of people in South America and, increasingly, by poor people throughout the ‘developing’ world and by sympathetic members of “international civil society,” all of who are clamoring for a

profound change in the way things are done. They lie at the very heart of the “anti-globalization” movement (WSF 2003, 2004). My contribution has mainly been to recognize, through comparative study, that the moral principles leading to successful sharing and self-restraint in the management of water are basically the same everywhere. They form a basic cultural model or “schema” (D’Andrade 1990; Guillet 2000) which has the potential to create a widely perceived and compelling compatibility between individual self-interest and the common good. This widespread cultural model or tradition can, and must be, applied now to the most serious problem we face: that of restoring and successfully governing the global commons.

Having to share scarce water in order to survive can foster such insights, by revealing the moral and political nature of the challenge of achieving sustainable life in a limited world. Water has a way of clarifying things; that is its nature, and people are of course always aware that they cannot and do not create it. Once we let go of the illusion of creating wealth, and perhaps take water as emblematic of real wealth in general, it becomes clear that this, at a planetary level, is the challenge that lies behind the holy-grail search for the means of creating a sustainable world, a world without poverty and one that will last. We are faced with a moral imperative, an entirely rational one to come to our senses and to act accordingly. The decision will be based on “enlightened self-interest” as well as an abiding concern for the common good, between which there is no inherent contradiction. No dilemma is involved because we no longer have any choice but to see that the two interests are actually one and to act in unity as human beings, the inhabitants and stewards of a small and fragile planet. The challenge is to agree, out of simple necessity, to restrain ourselves for our own sake as well as that of all other people, in a limited world where the future is now and from which there is no escape.

¹ The author wishes to express his profound gratitude to the John D. and Catherine T. MacArthur Foundation for generously supporting the research in Spain that led to this paper during 2003-2004 in their *Program on Global Security and Sustainability*. Thanks must go to many people, especially to Ellen Messer and Bill Mitchell for their help and encouragement through the years [**other acknowledgements to follow if article is accepted**].

² I say this as a citizen and consumer in the United States, and I am speaking here of a broad perspective or world-view that is regularly reinforced by actual messages and phrases that one hears almost every day in the media and the press in reference to what is said to be the very heart of our economic system: “wealth creation” “the creation of wealth” or “to create wealth”.

³ Here we would do well to recall the deliberate undermining and under-funding of foreign aid programs involving birth control for ‘developing’ countries throughout the world, done by the U.S. government under two Bush administrations during the last thirty years, a political decision made on behalf of people who are supposedly “pro-life” and “anti-abortion.” The amount of population growth that this decision will ultimately have needlessly allowed to take place could be estimated fairly accurately, revealing that, whatever else that decision by the “moral majority” may have been, it was certainly “pro-poverty.”

⁴ With a few important exceptions (e.g., Friedman 1994, 2004; Turner 2004), anthropologists—especially those in America--have tended to focus their attention during the last two decades on how processes of globalization interact reflexively and recursively, and yet locally, with abstract and subjective cultural phenomena such as “representations” and “identity” or “alterity”, for the most part leaving examination of the underlying flows of material resources, forms of capital, and even the clashing social classes, to political economists and researchers in other disciplines. Economic anthropologists and historians, however, are well aware that, in an argument now generally referred to as “the Polanyi problem”, Michael Polanyi predicted the outcome of globalization and “free-market” fundamentalism several decades ago, without having to resort to an energetic or thermodynamic argument (see Pollin 2005).

⁵ To people who continue to argue that there are no ‘facts’, as some anthropologists and geographers still do, especially in America, I would respond in two ways. First, based on my experience, such a view meets with little or no sympathy or understanding among people in the Andes, especially *campesinos* and other people who live out much of their lives farming in the countryside. I would suggest that serious proponents of such a thoroughly relativist view go out and spend some time living and subsisting in a peasant village or urban shantytown, particularly in an area wracked by U.S.-backed political violence. I am convinced that such an experience, surreal though it can be (Taussig 1993), will quickly convince them of the grim reality of the material facts of existence for many of the world’s people.

⁶ How and when did credit cards and debt-financed consumer spending--upon which the entire economy of the G8 countries now heavily depends--become so freely available? People who are old enough can fortunately remember back to the 1970s, when they were perhaps students with no apparent hope of ever having a credit card. That was, among other things, the decade when an enormous amount of brand new commercial real estate built by banks all over the U.S. ended up lying empty. The banks lent their way out of this debt and bad investment by very shrewdly transferring the debt on to the rest of us. But the strangest thing of all is that it was our money, in the form of savings (now almost unheard of) and checking accounts that had financed those bad real estate investments in the first place. Those enormous bad investments made with our money (or our parents’) were in effect “freely” bought back by us from the banks on credit! Again, this is a situation all too familiar to people in South America; they, however, had no choice in their collective refinancing of bad loans, and it was not their savings that were in effect spent up in the initial loans but rather their future.

⁷ I use the term here as Gramsci (1971) first did, in reference to the predominance in capitalist

culture of a kind of seemingly voluntary self-interest that appears common-sense-like but is ultimately a form of false consciousness.

⁸ As Wade (2003), Pollin (2005) and others have shown, Baghwati's (2004) defense of globalization and reply to Stiglitz is interesting but, particularly from the South American point of view, it does not hold water, since it shows that the only 'developing' countries that have benefited from globalization (mainly China and India) are now doing so because, until very recently, they did not even begin to follow the neo-liberal formula imposed by the "Washington consensus", which, at least until now, has been the very heart of globalization. In this case, these exceptions do not "prove the rule" but rather do the opposite.

⁹ Although anthropologists are of course well aware of this fact, most Americans clearly are not. As the unfolding debacle in Iraq now reveals quite clearly, the vast majority of all the "foreign aid" money supposedly given historically there, as in other 'developing' countries in the past, never left the United States. Such seemingly generous aid has always been tied to strict conditions, mainly that the money could only be used to pay American contractors and subcontractors or to buy equipment and materials purchased in the U.S.. The main beneficiaries have always been the 'developers' rather than the underdeveloped', who have nevertheless had to pay the tab (see, e.g., Todaro 545-557; Korten 1995). The United Nation's Millennium Development Project has shown just how little of our affluence would have to be sacrificed in order to achieve an enormous benefit for the world's poor: only .07% of the GDP of the G8 countries, provided that the money stayed in the recipient country and did not immediately flow back into, or perhaps never even leave, the donor country.

¹⁰ Although there is now widespread agreement on this as a goal, its main proponent is Aubrey Meyer (2001) of the Global Commons Institute, who argued for it in his recent editorial for The Guardian, "Climate change: imagine a charging rhino", presenting a near perfect analogy for the challenge we now face. Unfortunately, the rhino hit the beautiful city of New Orleans a short time ago, but fortunately relatively few people were killed, while our President, fully aware of the approaching beast, vacationed on his Texas ranch.

¹¹ This model for local self-management of irrigation water, which I call the "moral economy of water", has been shown to exist in several peasant communities of relatively small scale in the Peruvian Andes (Trawick 2001a,b; Treacy 1994a,b), in three rather famous irrigation systems of much larger scale in the Costa Blanca of Spain (Trawick 2005; in press)--systems that are of Islamic origin, clearly unrelated historically to those in Peru, and were previously thought to be of fundamentally different types (Maass and Anderson 1978; Ostrom 1990, 1992). The model and its basic principles have now also been confirmed to be in operation in at least two indigenous communities in northern Atacama region or Chile (Trawick and Marmol n.d.). Colleagues who have recently done work on a very large number of successful irrigations systems of the full range of scales in India, Nepal and the Philippines, with whom I am now beginning a research project, strongly suspect, based on their own prior field experience, that the same basic kind of system is common in each of those countries (D. Lam, personal communication; N. Sengupta personal communication). I believe that this tradition, and the operating principles on which it is based, was worked out independently in scores of communities all over the globe and was once widespread throughout the ancient world. As I have argued previously (Trawick 2001b), it seems likely that, because of its effectiveness and superiority, the tradition was even officially endorsed by the Incas as a way of governing their empire, as some of the early Spanish chroniclers claimed.

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