

Degrowth and the Social Structure of Accumulation

Kent A. Klitgaard*

ABSTRACT

The world economy is now at a point of systemic crisis. The lack of economic growth is producing high levels of unemployment and poverty. At the same time, cumulative growth of the material economy is depleting our resource base threatening humanity with potentially catastrophic climate change. A new set of economic theories must be developed in order to understand the process of degrowth that will be imposed by the planet's biophysical limits. The approach of the Social Structure of Accumulation is a potentially fruitful starting point for understanding change in institutional structure.

INTRODUCTION

The economies of the developed world face a fundamental dilemma as the second decade of the 21st century approaches. Unemployment rates hover near the double-digit level, the government's capacity to stimulate spending is limited by debt and political processes, and poverty levels are on the rise. From the mainstream point of view the situation calls for growth, and there is no shortage of opinion as to how to best stimulate growth. While economists and politicians may disagree about the best strategy by which to achieve growth, few question the efficacy of growth itself.

Yet, at the same time, there is ample reason to think seriously about the benefits of growth. The economy exists within the parameters of a finite and non-growing planet. Nearly all scientific measures show that we are perilously close to the planet's limits if not, in many instances, in overshoot. However an economy in overshoot cannot grow its way into sustainability. The relation between the limits of the planet and the limits of the economy are treated theoretically as either non-related events or a tradeoff. At the present moment, jobs are at the top of the political agenda. What we need, in order to attain a sustainable economy, is a set of institutional arrangements by which human needs can be met while simultaneously living meaningful lives within the limits posed by the dynamics of the economy and by nature.

Economic activity takes place within social and biophysical contexts. By a social context I mean the set of institutional arrangements that govern how individuals interact with each other and with collective organizations. The biophysical context is set of the limits that are imposed by the laws of nature such as the laws of thermodynamics, energy density of fuels, nutrient availability, and the properties of electromagnetic radiation. We are currently in a systemic crisis of a failed growth economy. The social institutions are capable of providing neither "the good life" for the majority of the Earth's seven billion people, nor sustained economic growth on a biophysically limited planet. Therefore the problems cannot somehow be "fixed" by means of marginal adjustments. The institutions themselves must be reconfigured

*Professor of Economics and Patti McGill Peterson Professor of Social Sciences. Wells College. Aurora, NY

to accommodate the new realities of an economy approaching rapidly its limits. The fundamental purpose of this paper is to introduce contemporary readers to heterodox and institutional theories for the purposes of developing a theory that synthesizes more complete and systemic economic theory. The particular analysis that is developed in this paper is the Social Structure of Accumulation (SSA). While the SSA approach holds particular promise for understanding the energy-short and climate-compromised world to come it, in turn, must be adapted. The SSA approach lies well within growth-oriented economics. The social structure of accumulation was originally defined as “the specific institutional environment in which the capitalist accumulation process is organized” (Gordon, *et al.* 1982: 9). Furthermore, the theory asserts that steady capital accumulation requires a well-functioning and supportive set of institutions, and once these institutions are constructed, rapid capital accumulation will follow (Kotz 2006). However, we need to find a set of social institutions that provide for human needs, employment, and opportunity in the absence of the ability to grow. We must first find a set of institutions that will guide the process of degrowth as the economy must back away from overshoot.

SOME EVIDENCE OF BIOPHYSICAL LIMITS

There are a wide variety of biophysical limits to human activity. This paper will focus on three: the global peak of petroleum production; climate change induced by human activity; and the ecological footprint of humanity. Petroleum is close to peaking on a global scale. Oil alone accounts for 40% of U.S. energy use, with coal and gas accounting for about 25% each. All the “new” alternatives (wind, solar) account for less than 1% combined (Hall and Klitgaard 2011). We are truly dependent upon fossil fuels to power our economy. Energy analyst Cutler Cleveland and colleagues attribute 90% of gains in productivity to the increased application of fossil fuels (Cleveland, *et al.* 1984). Once the global oil supply peaks, indicating we have extracted half of the petroleum created in geological time, energy will become less available and more expensive as demand continues to grow, at the current rate 2.5% per annum. The U.S Energy Information Agency expects energy consumption to continue this growth trajectory, more than doubling by 2035 (USEIA, 2011). Once global production peaks, the best oil will have already been acquired, leaving only that which is more expensive, harder to extract, and lower quality. Consequently the cost, in terms of energy, for acquiring new energy (better known as the Energy Return on Investment or EROI) will continue to increase. When the Spindletop field of East Texas was initially tapped in the early 1900s about 100 units (joules or kilocalories) of energy were returned for every one put into the process. By 1974 the EROI for domestic oil had fallen to 9:1 and by 1980 to 3:1 (Hall and Klitgaard 2011). Domestic oil production peaked in 1970, while estimates for the global production peak range between seven years ago and 2050 (Campbell and Lahererre 1998). The age of cheap oil is clearly coming to an end. Since cheap and available energy has been such a primary driver of economic growth, then economic growth will be compromised, forced by the decline of a flexible, energy dense source of fuel for which few, if any, substitutes, are on the horizon. Historically, economic progress has been driven by the substitution of high EROI energy sources for low EROI sources. The medieval economy was based on

wood (biomass) wind, and the muscle power of humans and animals. The initial stage of the industrial revolution was powered by coal, and later by oil and natural gas (Li 2006). If no viable replacement can be found, and the scientific evidence for such a prospect is scant then “business as usual” will not proceed as it has in the recent past. Limited and expensive petroleum will limit the rate of economic growth, not by choice, but by necessity.

At the same time a case can be built that humans need to restrict the growth of the material economy as regards carbon emissions. Preindustrial atmospheric carbon concentrations stood at approximately 275 parts per million (ppm). Historically CO₂ concentrations have varied between 200 and 300 ppm over the past million years Atmospheric CO₂ concentrations of 200 ppm or less have correlated with ice ages, while levels in the 275-300 ppm range have produced the geologically unprecedented climate stability of the Holocene period. Since about 1750 humans have added about 2 ppm to the atmosphere annually. As of now carbon dioxide equal concentrations approximately 390 ppm. Climatologist James Hansen, of NASA Goddard Space Centers, argues that an atmospheric carbon concentration of 350 ppm represents a theoretical “tipping point,” beyond which damage to climate stability will be irreversible. The controversy surrounding climate change has long been posed as a problem that will be faced by our grandchildren. However the mounting evidence on droughts, floods, sea surface warming, sea-level rise, glacial melt, the cost of storm damage, and insect infestation indicate it is our generation that must deal with the consequences of a warmer planet now. Bill McKibben asserts that our planet will be little like the planet on which human civilization evolved if carbon emissions are not limited immediately (2010).

While the climate science is settled, the political debate rages, essentially around the issue of economic growth. Any attempt to reduce carbon emissions will entail not just increasing energy efficiency, but will also necessitate reduced consumption. The nations of the world have been unable to agree on a framework for reducing carbon emissions, despite numerous recent attempts (Copenhagen, Cancun, etc.) precisely because reducing carbon would entail the reduction of growth in the material economy in a time of overall world crisis. A similar analysis of the need for reduction in the size of the material economy is found in the ecological footprint literature.

Ecological footprints measure the amount of food, fiber, and non-fossil energy that is required to support the existing lifestyle of a particular area. The amount of land needed per capita to produce water, food and fiber, housing and waste management is then normalized to a unit called the global hectare (gha) which is simply a hectare ($1 \times 10^4 \text{ m}^2$) of average productivity. In 2006, according to the Global Footprint Network the world’s ecological footprint for the world was 2.2 gha, yet the biocapacity was but 1.8 gha. In other words, humanity is using about 120% of the planets annual flow of primary productivity. Moreover, the distribution of resource use is far from equally distributed. The ecological footprint for the United States in the same year was 9.6 gha. If everyone in the world were to consume as does an “average American” the world would need nearly five planets to support this level of consumption. However we only have one! Dietz, *et al.*(2007) estimate that the human ecological footprint is growing at 2.12% per year, and that by 2015 we will need 1.6 planets to provide food, fiber and energy to a growing

human population. Clearly this is unsustainable, especially when the driving force of the short-term ability to exceed carrying capacity, cheap oil, is at its global peak. Based on these data Trauger *et al.* (2006) presented ordinary least squares results indicating that the U.S. economy would have to shrink significantly in order to achieve a steady-state equilibrium within biophysical limits. Trauger estimates that a steady-state sustainable balance in the United States would entail a population of less than two-thirds of the present level (200 million) and a per capital annual income of only \$18,500.

This is the dilemma faced at the beginning of the 21st century. If we continue the unsustainable growth path of the past century humanity will most probably face ever-increasing resource shortages, and a more variable climate than the one we are currently facing. If carbon emissions grow at the current level, atmospheric carbon concentrations may reach 1200-1400 ppm. Indeed, if all the Copenhagen proposals were implemented, carbon concentrations would still exceed 725 parts per million by 2100, more than double the levels that have produced the Holocene climate stability. Yet a cessation of growth, under our present institutional arrangement is commensurate with high levels of unemployment, rising poverty, world tensions and, for many, increased hopelessness and cynicism. Economists need to develop a theory that can understand how the economy can meet human needs while remaining within the planet's carrying capacity. Unfortunately, at this time, we do not have such a complete theory. It is towards providing such a theoretical framework that the present essay now turns, tracing the origins and the implications of the Social Structure of Accumulation School.

A BRIEF HISTORY OF THE SOCIAL STRUCTURE OF ACCUMULATION

The SSA framework began in the mid-1970s with empirical studies on structured labor markets. Labor Market Segmentation was a historical process by which labor markets were divided into non-competing sub-markets with different labor market characteristics and work rules. Secondary labor markets, were characterized by low wages and productivity, high turnover, and little skill development. Primary labor markets exhibited high wages, stability and written work rules. The theory also separated the upper tier primary labor markets into two separate segments. Subordinate primary jobs were those in the mass production industries. They were routine, but replete with job ladders, negotiated wages and work rules, and often unions. Independent primary labor markets included professional labor markets and allowed for, if not expected, some degree of creativity and independence (Reich *et al.* 1973).

In 1974 Harry Braverman published *Labor and Monopoly Capital* where he traced the degradation of work in the twentieth century, driven by the needs of large corporations to reduce unit labor cost by increasing productivity and control of the point of production. Braverman chronicles the historical separation of conception from execution, especially as regards organizational changes such as scientific management, and the impact of technological change, in producing work that was devoid of meaning. He also predicted that the standardization and routine that characterized manufacturing would be imposed upon "white collar" and service employment as well. Braverman saw little hope for the resurrection of meaningful work as long as the institutions of large-scale capitalism remained in place.

Contested Terrain by Richard C. Edwards appeared in 1979, arguing that labor market segments evolved historically in response to crises of control at the point of production. Different systems of control characterized different segments of the labor force. The competitive era of capitalism employed simple and direct methods of labor control. The coming of the industrial revolution brought new forms of control. Mass production industries were subject to technical control, or machine pacing, and the nearly unlimited power of the foreman. Edwards contends that further development of capitalism brought forth not greater homogenization, but segmentation. In the years following the Great Depression and Second World War, many companies embarked on strategies to overcome the worst excesses of technical control and instead link the interests of the worker to those of the company. Under a regime of bureaucratic control an employee will advance by means of obeying the all-important company rules. A greater degree of control was offered those who labored under bureaucratic control than those working under technical or simple control strategies. In conclusion different forms of control evolved to fit different economic times, and each segmentation period was dominated by a form of control. Competitive capitalism utilized primarily simple control, while the homogenization period relied on technical control. The segmentation phase was characterized by bureaucratic control. Most importantly, the driving force behind changes in economic structures and institutions were changes in control at the point of production.

The social structure of accumulation approach made its formal appearance with the 1982 publication of *Segmented Work, Divided Workers* by. This book linked changes in the organization of labor and systems to control to broader oscillations, or long swings, in macroeconomic activity and identified three separate long swings in economic activity. The authors explained expansion and contraction by means of changes in the labor process and in the institutional structure. Long periods of accumulations were driven by a set of social institutions that were compatible with profitability and growth. When those social institutions decayed, long periods of economic stagnation followed.

Each SSA went through three phases. In the decline of the long swing traditional methods of profit making become ineffective and the more advanced and innovative capitalists explored new methods of organizing work. As these become generalized they help drive the next long period of economic prosperity in which the social structure is consolidated. But as conditions change the existing social structure is no longer conducive to profit making and accumulation. Consequently the SSA decays with the declining phase of the long swing. In the depth of the depression that signals the decay of the existing SSA the more innovative capitalists explore once again new technologies and modes of organization. These are consolidated in the expansion phase of the next long swing. Gordon, Edwards and Reich identified three complete SSAs. The initial proletarianization of the labor force lasted from the 1820s until the 1870s. The second SSA, homogenization, erected on the foundation of oligopoly, mass production, operative labor, and a management style they called "the drive system," was explored in the long downward swing of the 1870s-90s, consolidated in the early years of the 20th century, and decayed in the interwar years. The final SSA, *labor market segmentation*, was explored in the Great Depression, consolidated fully during the long post-war boom period and began to decay in the early 1970s. But a

question remained unanswered. Could a global phenomenon such as long swings in economic activity be explained fully by changes in the labor process in the United States?

The SSA theorists responded in 1990 by expanding their conception from a labor process-based SSA of segmentation to a broader post-war social structure of accumulation. In *After the Wasteland* Bowles, Gordon, and Weisskopf specified four pillars of prosperity upon which the postwar SSA was consolidated. These included *Pax Americana*, or the postwar peace established upon the basis of US dominance of manufacturing, money, and military might. A second core institution was a limited capital-labor accord whereby manufacturing workers negotiated the sharing of productivity gains with capital. A capital-citizen accord produced a mild Keynesian welfare state, as the gains of the New Deal were expanded and enabled by a commitment to economic growth. Finally the application of anti-trust law and regulations to accept large-scale corporations where they existed, plus the co-respective behavior of oligopoly firms limited the kind of cutthroat competition that proved so ruinous in the long decline of the 1870s-1890s.

This was sufficient to produce growing productivity, rising profits, strong capital accumulation and growth until the early 1970s, when internal and external forces combined to cause the decay of the postwar SSA. The costs of maintaining a complex empire began to mount and add to the country's balance of payments deficit. Moreover the domestic supply of oil peaked in 1970 and in 1973 the country was subjected to significant run-ups in the price of oil and gasoline. The Bretton Woods Accords collapsed when volume of claims exceeded the gold stock. Facing the loss of profits linked to the decline of US hegemony, U.S. corporations could no longer "afford" a limited capital-labor accord. The costs of military spending in conjunction with civilian spending necessary to maintain the capital-citizen accord at a time of high unemployment produced demand pull-inflation. This combined with the cost-push inflation driven by resource price increases, union contracts with cost of living adjustments, and the administered pricing of oligopolies produced simultaneous inflation and recession. Moreover Europe and Japan began to compete effectively with the United States on world markets, increasing the pressure upon profits. The postwar SSA simply could not withstand the myriad pressures of the stagflation era and began to decay. Productivity growth declined from 2.7% per year in the 1950s to 0.3% per year in the 1970s, while GNP growth fell accordingly, from 4% in the 1950s and 1960s to 2.6% per year in the 1980s (Bowles, 1990: 6). Yet a new SSA was not immediately constructed as the groups and classes that benefited from the old institutional arrangement still possessed sufficient power to block a new, and more conservative, agenda based upon more business friendly principles. A period of impasse ensured for nearly a decade.

Out of this decay of the old order a new SSA was explored. Keynesian economic theory and policy was rejected in favor of "supply side economics." The new approach consisted of a commitment to five major policy initiatives designed to reverse the declines in productivity growth, corporate profitability, and international power. The first entailed the use of contractionary monetary policy to plunge the economy into the "cold bath" of recession, thereby stemming the tide of inflation and increasing unemployment sufficiently to restrict union power and increasing wages. Secondly workers' organizations were attacked directly and the National Labor Relations Board was staffed with administrators hostile to the very notion

of collective bargaining. The third component was the deregulation of business in general and finance in particular. Tax policy was employed to shift the distribution of income towards those at the top. Finally the last policy aspect was a remilitarization and more aggressive use of the military to achieve international goals of re-establishing the hegemony of the immediate postwar period.

Because contradictory forces exist in the institutional structure the acceptance of the program did not lead to rapid capital accumulation. The tight money policy that served to reduce inflation and break the power of labor also increased interest rates enough to choke off real investment. High interest rates draw foreign portfolio capital and increase the value of the dollar on international markets. This is beneficial as it makes access to raw materials, especially dollar-denominated oil, cheaper. However the same high interest rates make exports more expensive and exacerbate the trade deficit that emerged in the 1980s. Although the profit share increased with the increase in inequality, the output-capital ratio fell sufficiently, due to the expansion of excess capacity, that the growth in profit rates remained sluggish. In the end the 1980s produced economic growth, but that growth was based primarily on the expansion of debt.

By the early years of the 21st century SSA theorists debated whether the conservative explorations of the 1980s had been consolidated into a new SSA based on neoliberalism. Kotz and Wolfson (2010) argue that a new neoliberal SSA was consolidated over the last decades of the 1900s. Kotz (2009) argues that a core set of neoliberal institutions have been sufficiently implemented to establish a new SSA. These include 1) a belief in small government, 2) deregulation of domestic finance, 3) deregulation of labor markets and a more market-based approach to industrial relations, 4) the free movement of international money capital and finance, 5) international relations to establish US military power, and 6) the advancement of the belief that the neoliberal agenda was inevitable.

However they also believe that the internal dynamics and contradictions of the neoliberal SSA have not manifest themselves as rapid and sustained capital accumulation. The rate of GDP growth in the neoliberal SSA (1990-2007) was 2.99% per year, a rate not significantly higher than the growth rate of 2.93% during the decay of the postwar SSA. The deregulation of finance has led to an expansion of debt and the rise of asset bubbles, and the traditional role of the SSA in balancing the rivalry between industry and finance has not been forthcoming. The balance has been tipped towards finance. The increase in inequality has made it difficult to resolve the conflict between productivity increases and effective demand. The postwar SSA capital labor accord allowed the sharing of productivity gains, leading to increased consumption. The neoliberal SSA is based on the idea that productivity gains belong to capital. In the neoliberal SSA increases in productivity justify reduction of employment not increased compensation. This exacerbates the problem of effective demand and pushes consumers to contract increasing amounts of debt. The trade and payments deficits plus the globalization of finance removes the independence of domestic authorities. The United States has reached the limits of economic expansion by means of debt-financed fiscal policy and is at or near the limits of monetary policy. Kotz, in fact, advocated the separation of the SSA from the need to produce sustained growth, and suggested replacing term social structure of accumulation with that of Institutional Structure. He shows that Liberal

Institutional Structures produce lower rates of growth than do Regulated Institutional Structures (Kotz 2006). Harkening back to *Segmented Work, Divided Workers*, Wallace and Brady contend that we have already entered a new SSA which they term Spatialization. This encompasses the global mobility of capital with new computer technologies. The method of control is called technocratic control, and is built upon information technology. While computerization gives a small minority tremendously creative work, the computer routinizes the work of most (Wallace and Brady 2010).

This is the dilemma that economists must face directly. If an economy is at its biophysical limits it cannot continue to growth without risking potentially severe ecological crises in the near future. But if a growth-dependent economy fails to grow it produces unemployment, loss of wealth and social dislocation in the immediate period.

A SUSTAINABLE INSTITUTIONAL STRUCTURE

The neoliberal SSA is now teetering on the brink of collapse, as the world seems to have reached a period of “peak debt.” Despite the conservative belief that further deregulation will bring about another period of vibrant growth, the economies of the world’s developed economies are entering a period of austerity. Yet most economists believe that the market forces will again balance the world economy if given sufficient time. But it is likely that by the time the internal imbalances of the world economy are rectified, the biophysical limits will have begun to assert themselves more seriously. In this case growth is neither possible without further ecological overshoot, nor wise. Instead we must build an institutional structure built upon sustainability. But first, the world must enter a period of degrowth, in order to step back from the impending biophysical limits.

The most difficult task will be to accommodate employment and opportunity in the absence of economic growth. In this case, something other than mass consumption of increasingly energy-intensive and sophisticated gadgets must replace the current vehicle of well-being. Secondly, a more equal distribution of income must replace the emphasis on the growth of income, as the biophysical system can no longer accommodate income growth without the increasing probability of ecological catastrophe.

A Sustainable Institutional Structure (SIS) must be based on meaningful work, with less emphasis on productivity and quantity. Here, a return to the original focus of SSA theory, changes in the labor process, will be crucial for understanding how work has been stripped of its meaning. If ecological economists do not treat seriously the need for work, then the insights about the limits of nature will not be heard. If growth-oriented economists neglect biophysical limits, then economics will be of little use in a climate compromised and resource scarce world. For vast majority of human history, until the age of fossil hydrocarbons, human society was characterized by two phenomena: production for use and utilization of the solar flow as an energy source. The brief era of fossil hydrocarbons allowed us to not only transcend the diffuse and hard to capture energy source of the sun, but also allowed a vast increase in the scale of production and exchange. I can only hope that we have learned enough from the expansion of science that accompanied the fossil fuel era that we can do a better job of capturing and storing the solar flow

than did our medieval ancestors. When fossil hydrocarbons are sufficiently depleted and climate stability compromised, we will, out of necessity, return to a smaller-scale, more community-based system of production for use. The hard work is envisioning a new and sustainable institutional structure, and managing the transition to degrowth needed to step back from our current overshoot of nature's limits, with a minimum of social dislocation. This will entail a far greater amount of work on my part.

REFERENCES

- Bowles, S, D. Gordon, and T. Weisskopf. 1990. *After the Wasteland*. Armonk, NY: M.E. Sharpe, Inc.
- Braverman, H. *Labor and Monopoly Capital*. New York: Monthly Review Press.
- Campbell, C., & J. Laherrere. 1998. "The End of Cheap Oil." *Scientific American*. March: 78-83.
- Cleveland, C, R. Costanza, C.A.S. Hall and Kaufmann. 1984. "Energy and the US Economy: A Biophysical Perspective." *Science* 225: 890-897.
- Deitz, T, E. A. Rosa and R. York. 2007. "Driving the Human Ecological Footprint." *Front. Ecol. Environ.* 5(1): 13-18.
- Edwards, R. 1979. *Contested Terrain*. New York: Basic Books.
- Gordon, D, R. Edwards, M. Reich. 1982. *Segmented Work, Divided Workers*. Cambridge: Cambridge University Press.
- Hall, C.A.S. and K. A. Klitgaard. 2011. *Energy and the Wealth of Nations*. New York: Springer
- Kotz, D. 2009. "The Financial and Economic Crisis of 2008: A Systemic Crisis of Neoliberal Capitalism." *Review of Radical Political Economics*.(41): 305-317.
- Kotz, D. and M. Wolfson. 2010. "Global Neoliberalism and the Contemporary Social Structure of Accumulation." In *Contemporary Capitalism and Its Crises*. McDonough, T., Reich, M., & Kotz, D. Eds. Cambridge: Cambridge University Press.
- Minqi, Li. 2006. "Capitalism with a Zero Profit Rate?: Limits to Growth and the Tendency for the Rate of Profit to Fall." In *Growth and Crisis, Social Structure of Accumulation Theory and Analysis*. McDonough, T., Reich, M., Kotz, D., & M-A. Gonzalez-Perez. Eds. Galway, Ireland: Centre for Innovation and Structural Change.
- McKibbern, B. 2010. *Eaarth*. New York: Times Books.
- Reich, M, D. M. Gordon and R. S. Edwards. 1973. "A Theory of Labor Market Segmentation." *American Economic Review*. 63(2): 359-365.
- Trauger, D and G. Mansi. 2007. "Ecological Footprints: Tracking Economic Steps Towards Sustainability and Biodiversity Conservation." The Wildlife Society. Tucson, AZ. September 26.
- United States Energy Information Agency. 2011. *World Energy Outlook*
- Wallace, M. and D. Brady. 2010. "Globalization or Spatialization? The Worldwide Spatial Restructuring of Labor Process." In *Contemporary Capitalism and Its Crises*. McDonough, T., Reich, M., & Kotz, D. Eds. Cambridge: Cambridge University Press.