



Replacing the Concept of Externalities to Analyze Constraints on Global Economic Growth and Move Toward a New Economic Paradigm

Jim Lunday

Independent Workforce Trends Analyst

Abstract

The prevailing economic paradigm has fallen short as a guide to policy making in this era of global economic crises. Numerous efforts are underway to revise it or replace it with a science of society that integrates intellectual disciplines. This paper makes a contribution to those efforts by arguing that the economic concept of externalities is no longer viable and that replacing it with the concept of an inclusive world economy provides new explanatory potential. The concept of externalities divides the world hierarchically, with the internal dominant and the external subordinate. In this way it gives any group of people the scientific legitimacy to conquer, manage and use other peoples and the natural world (the external) instrumentally; by extension, it drives the creation of ever newer technologies to do so. The concept fit the economic growth experiences of the emerging capitalist nations in the centuries prior to the 20th fairly well. Now that we live in a world in which all peoples, all economic activities, and all of the earth are tied together into a global economy that is no longer the case. The concept of an inclusive world economy fits our contemporary experiences better, aligns well with an integrated science approach, and provides new insights into prospects for economic growth.

“At the dawn of a new year, the world is in the midst of several epic transitions. Economic growth patterns, the geopolitical landscape, the social contract that binds people together, and our planet’s ecosystem are all undergoing radical, simultaneous transformations, generating anxiety and, in many places, turmoil.”¹

Efforts to construct a new paradigm of understanding and action that makes sense of our world and empowers us to create a better one are being pursued in many quarters. This quest is widely seen as necessary because so much that has happened over the last quarter century has undone our sense of knowing what is going on. And having lost our sense of what is going on, we have lost our ability to effectively solve problems, especially those for which a collective will is required.

The financial crisis of 2008, the Great Recession, and the slow and fitful recovery have shattered our certainty about economic matters. Concerns about rising levels of economic inequality, the emerging resource limits, and record numbers of extreme weather events are

undermining our faith in a future that is more equitable and prosperous than the present. Globalized trade and financial relationships have increased exposure for everyone to many more sources of economic and political shocks.

The responsibility for our troubling circumstances falls heavily on the field of economics. Economists did not predict the financial crisis of 2008, did not warn that the recovery from the Great Recession would proceed very slowly and be incomplete, have largely dismissed concerns about climate change and resources limits, and almost universally hail globalization as an unmitigated advancement for the world's people.

The need for rethinking economics is clear. Some of the world's leading economists have affirmed this:

*“As a world economic crisis developed in 2008 and lasted longer than most economists predicted, it became increasingly clear that beliefs about macroeconomics and macroeconomic policy needed to be thoroughly examined ... we knew that we had entered a brave new world ...”*²

“Human activities, institutional processes, climate dynamics, & ecosystem dynamics are all deeply connected.”

The challenge for people working to construct a new paradigm is well defined. The failures of the prevailing economic paradigm mentioned above, and others, tell us what a replacement paradigm must do well. How to go about the work of constructing that new paradigm is less well defined. But, we do have some ideas with which we can begin.

The scope of the work cannot be limited to the field of economics. The effort must draw from many intellectual disciplines and the resulting paradigm must transcend disciplines because the challenges the world is facing transcend disciplines. We now know that human activities, institutional processes, climate dynamics, and ecosystem dynamics are all deeply connected. We also know that ideas about challenges and opportunities, and decisions about which public policies to develop and implement, are deeply connected to our value systems.

The need for this kind of approach was captured with a rhetorical question in the preface to the *World Social Science Report 2010*: “Does a more integrated world require a more integrated social science?” The report went on to examine institutional issues related to taking a more integrated approach in the social sciences.³ In an article devoted to explicating the effort to construct a new paradigm Garry Jacobs surveys the forces behind the need for a new paradigm and calls for “an integrated science of society based on common principles to replace the fragmented disciplines that prevail today.” Those common principles broaden the call for an integrated effort to make it a values driven effort. In particular, Jacobs calls for an effort in which the foremost guiding star is “the right of every human being to peace, security, welfare and well-being.”⁴

The Club of Rome has defined the interdisciplinary scope of the work in programmatic terms. Its description for the program, *A New Path for World Development*, lists five areas of work (environment and resources, globalization, world development, social transformation, and peace and security). These areas of inquiry bring together multiple disciplines. The program description adds that a systems integration effort is part of the program: “As work proceeds on the five clusters, a parallel effort will focus on developing a better conceptual and practical understanding of the world systems within which they are linked and embedded. This helps to understand the linkages between trends, issues and actions and to identify the drivers of global change.”*

Two suggestions for particular steps to take are offered in the June 2014 Newsletter of the World Academy of Art and Science. Alexander Likhotal defined the work ahead in this way: “We need to develop a new content-based vocabulary for the changing social context, for the new model of social life.” While not directly responding to this idea, Ivo Šlaus suggested a way to begin this work: “A new paradigm maintains and preserves all the valid aspects of the existing paradigm...” These statements suggest that we can begin with a critical examination of the premises, concepts, and causal statements that make up the prevailing economic paradigm, tossing out some, modifying others, and creating new concepts as appropriate.

This article takes the lead from these suggestions and examines a concept that is part of the foundation of the economics of capitalism. That concept is externalities. Economists use the concept of externalities at every level of economic organization, from the firm to an industry to national and regional economies. Here, our focus is on the use of the concept in relation to an economy.

The concept is worth examining because it can be linked to a prediction that is widely embraced in the field of economics: the prediction that the world economy, or at least the majority of nations, can be restored to a high rate of economic growth. Most of the world’s economists insist that for any nation, a high rate of growth is only a few sound policy decisions and a little time away. For the world economy it is only a matter of time until nations that adopt the right policies lead the world into an era of increasing prosperity.

We have to question this prediction for three reasons. First, it is one of the most important predictions that economists derive from their economic paradigm. It fuels a widely shared expectation that the world’s middle class people will become more prosperous and middle class material prosperity will spread to more of the world’s people. It also drives the policy discussions among the world’s leaders that give us the policies that will or will not solve the world’s vexing problems.

Second, a growing number of economists, environmentalists, physicists, and other experts argue that the potential for economic growth is becoming increasingly limited, perhaps impossible.^{5,6,7} Third, the slow and erratic recovery from the Great Recession to date is at least as consistent with a model of the world economy in which economic growth has become permanently constrained as it is with one in which a resurgence of economic growth is assured.

* *A New Path for World Development*, Program of the Club of Rome. <http://www.clubofrome.org/?p=697>

1. From Externalities to Limitless Growth

The concept of externalities facilitates optimism about economic growth because it lends scientific credibility to an abiding faith in technological mastery over the human made and natural forces that threaten a nation's welfare. In turn, this faith in technology leads most policy makers to dismiss critical discussions of the future of economic growth as misguided and embrace investment policies in technology that are intended to promote ever more economic growth.

Concepts are seldom either right or wrong. They facilitate or inhibit particular lines of reasoning and particular modes of action within the context of a paradigm. The economics concept of externalities is part of the prevailing paradigm of knowledge about the world. This is a paradigm that fragments and divides research and explanations – which is supposed to be a good thing because disciplinary and conceptual boundaries promote the development of specialized skills and knowledge. But disciplinary and conceptual boundaries don't just focus attention; they also inhibit the discovery and study of processes that transcend those boundaries and bias public policy development in certain directions.

The concept of externalities divides and orders the world in a way that intellectually and morally empowers groups of humans to use technologies to conquer, control, and exploit other peoples and the world of nature. It does this by setting up a hierarchy of relationships across geopolitical, ecological, and geophysical boundaries and by inhibiting development of understandings of processes that transcend those boundaries.

The very word “external” divides the world into the internal and external. In economics, this division connotes a hierarchy of initiative and power that is played out at the boundary that separates an economy (the internal) from everything else (the external). This hierarchical bifurcation is implicit in definitions of externality.

BusinessDictionary.Com defines an externality as “a loss or gain in the welfare of one party resulting from an activity of another party, without there being any compensation for the losing party.” About.com puts a slightly different, but relevant, spin on the concept: “An externality is an effect of a purchase or use decision by one set of parties on others who did not have a choice and whose interests were not taken into account.”*

As well as dividing the world into two components, these definitions define an asymmetrical relationship in which one party has greater power than the other. One party initiates an action; the other party is a seemingly passive victim (negative externalities) or beneficiary (positive externalities) of the action initiated by the first party.

In the Western mind, passivity is less worthy than activism. Thus, the concept of externalities also carries with it a hierarchy of worthiness. From within an economy (the internal world), the external world is seen as less worthy than the internal world, so it is legitimately subject to being conquered, controlled, manipulated, and consumed.

* See <http://www.businessdictionary.com/definition/externalities.html> and <http://economics.about.com/cs/economicsglossary/g/externality.htm>

2. A National Economy and its External Worlds

For economists and the rest of us, the primary economic unit is a nation. Everything economic is seen through the lens of boundaries that define a nation. The boundaries that come to mind immediately are territorial – the boundaries that divide the world’s people and territories into separate geopolitical entities and economies. But, a national economy is also defined in terms of geophysical and ecological boundaries. Certain things, notably the things of nature, are not part of the national economy even when they are found within the territorial boundaries of the nation.

3. The External Status of Other Economies

From the perspective of the people of an initiating nation, the boundaries of their nation are the boundaries of an economy. Other people and their economic activities and other territories are external. Because those people and their economic activities are external, economic relationships with them are “foreign” relations entered into for instrumental purposes – to supplement domestic demand, to provide supplemental and low cost labor, to gain access to the resources in their territories, and to use their territories as dumping grounds for waste.

The people of external territories are excluded from discussions within the initiating nation that lead to the pursuit of instrumental access through negotiations or invasion. From the perspective of the people in the initiating nation, it is up to external peoples to protect themselves and their economic activities. If they are unsuccessful at this, it is only evidence that the initiating people are superior and in the right to make use of the external peoples and their economic activities.

It should be noted that people who are not economically active and do not have a culturally legitimate reason for not being economically active are deemed to be external to the national economy. In status, they are also foreigners, even when they live in the same communities as those who are part of the national economy.

4. The External Status of Nature

Technically, humans are part of the natural world, but the people of a nation who are engaged in economic activities effectively define themselves as separate from nature. Nature is a separate and external form of existence.

The things of nature are not forms of wealth; the things of nature have no wealth value until people have done something with those things to give them market value (collected and delivered them; processed them into something else). Nature is also a dumping ground for waste and discarded wealth, even when the part of the natural world that is being used by a people for that purpose is within the national boundaries of the nation of those people. Waste never becomes part of the internal world (the economy) and wealth that is discarded is no longer considered to be wealth, so it is part of the external world.

External peoples are also seen as part of nature. They exist, but they have no wealth value until the people of the initiating nation do something with them – teach them, change their culture, and assimilate them into the nation as various forms of human capital.

5. Externalities and Technological Optimism

The inequalities of power and worthiness in the relationship between an economy and its external world facilitate a belief that the external can and should be used to solve problems encountered by the participants in an economy. In turn, this belief drives a continuing effort to create technologies for doing just that.

In the histories of the affluent capitalist nations, technologies to manipulate and process the external world have been used with considerable success. Extraction and transportation technologies have been used with great success to transform elements of the earth into material wealth. Weapons technologies and social control technologies have been used to gain access to elements of the earth in external lands and to control and use external peoples. This history of successes has imbued Western people with an almost unshakable technological optimism.

It is an easy intellectual move from technological optimism to optimism about economic growth. Whatever problem is holding up the restoration of a high rate of economic growth in the world economy can be fixed with technological advances. This optimism is nicely captured in the words of an academic professional and mother:

“When I was pregnant with my second daughter, I had a terrible, apocalyptic dream about a global water crisis. ... My second thought was Johns Hopkins will fix this. ... But I’m ever hopeful that science will find its way, that as my daughters grow up and have their own kids, they can worry about something else.”⁸

6. Conceptualizing an Alternative View

Seeing the world through the economics concept of externalities is not the only way to see it. Taking guidance from those who advocate an integrated approach to developing a new paradigm suited to the challenges of our times, we can also see the world as an integrated whole that must be studied and understood as a system. We can discard concepts that fragment the world and disconnect the pieces and turn to concepts that include and reconnect the fragments the prevailing paradigm has handed down to us.

The concept employed here is the concept of an inclusive world economy. This is a concept intended to shift analytic practice away from defining all problems and solutions in terms of geopolitical, geophysical, and ecological entities toward defining some problems in terms of processes that transcend those boundaries.

By adopting an inclusive point of view, we weaken lines of reasoning that depend on the concept of externalities, but we also strengthen other lines of reasoning. In particular, we

strengthen lines of reasoning that grow out of efforts to produce understandings of the world by integrating insights from multiple disciplines.

In the case at hand (examining prospects for continuing high rates of economic growth), adopting the concept of an inclusive world economy considerably undermines optimism about economic growth. Possibilities that are visible from the perspective of the limited world of the internal become less salient when they are considered alongside possibilities that become visible when the internal and external are united and system wide processes are given greater attention.

7. From a World Economy with Externalities to an Inclusive World Economy

The concept of externalities belongs to a bygone era. Without selecting a particular year or decade, we can say that the history of capitalism is divided into two periods. The first period (roughly the 16th through the 19th centuries) was a dynamic period in which capitalist nations and their emissaries and armies incorporated more and more of the world's peoples and territories and resources into the expanding system of nation-states and capitalist markets. That period roughly coincided with the activities widely referred to using the terms colonialism and imperialism. For convenience we can call that period the expansion period in the development of the world economy.

The concept of externalities belongs to that expansion period because significant numbers of the world's people and significant amounts of territory and resources had not been incorporated into nation-state jurisdictions; all aspects of life had not been organized around commodity markets, not even in the capitalist nations and not even by the dawn of the 20th century. Dividing the world into hierarchies of the internal and external was a strong fit with a world of capitalist and pre-capitalist societies, limited interactions across geopolitical and societal boundaries, political systems based on royal families and property rights, and limited understandings of the impact of human activities on the environment.

That world disappeared over the course of the 20th century. We are living in the second period of the history of capitalism and the concept of externalities does not fit the circumstances that now prevail. In this period there are no true externalities, no inputs from outside the system, and no outputs and outcomes that are transferred outside the system. There is a continuum from core to periphery in the system – core processes to peripheral processes, core nations to peripheral nations, core markets to peripheral markets, etc. In this world, the sources of inputs and the destinations of outputs and outcomes are politically defined as internal and external, but in reality they are only distributed unevenly among politically defined territories, populations, and ecosystems. No matter the distributional map for inputs, outputs and outcomes, they are internal to the world economy, not external to it. The earth and everything animate and inanimate that resides in, on, and above it constitutes the world economy. The current period can be called the inclusive world economy period.

Describing the contemporary world in this way is not new. In his book, *Something New Under the Sun*, J. R. McNeill writes an environmental history of the world economy that sets

off the 20th century as a new phenomenon because of the unprecedented scale of human activities and the unprecedented impact of those activities on the environment: "...for the most part the ecological peculiarity of the twentieth century is a matter of scale and intensity."⁹ In a similar vein, Herman Daly, an economist and advocate for a steady-state economy, notes that "The most important change in recent times has been the enormous growth of one subsystem of the Earth, namely the economy, relative to the total system, the ecosphere ... The closer the economy approaches the scale of the whole Earth the more it will have to conform to the physical behavior mode of the Earth."¹⁰

Describing the world in this way is also well aligned with calls for a new paradigm for understanding society that transcends disciplines. The concept of an inclusive world economy explicitly defines the world economy to consist not just of human activities and interactions among humans, but to also include non-human realms of activity and interactions between human institutions and those other realms of activity. Interactions among these various realms of activity and their consequences for human wellbeing cannot be fully understood without data and insights from the disciplines on all sides of those interactions.

8. Empirical and Interpretive Support for This View

Much can be said in favor of adopting the concept of an inclusive world economy. A growing body of empirical data shows that the peoples of the world are linked together in numerous ways. A popular expression of the "smallness" of the world is the idea of six degrees of separation between any one person and any other person on the planet.

9. Evidence of Global Integration

The high level of integration of the world's economic and geopolitical activities is demonstrated by numerous statistics. For instance:

- In 2010 the daily volume of currencies traded was 220 per cent higher than that in 2001, and 65 per cent of the transactions were cross-border — up from 54 per cent in 1998. Between 1990 and 2011 foreign direct investment increased more than six fold.¹¹
- The ratio of world exports of merchandise and commercial services to world GDP in current dollar terms was around 32 per cent in 2012, up from 22 percent in 1990 and close to its peak value of 33 per cent in 2008.¹²
- The movement of people across national boundaries is increasing. In 2013, 232 million people (3.2 per cent of the world's population) were international migrants; in 2000 the number was 175 million and in 1990 it was 154 million.¹³
- International travel is growing. From 2010 to 2013, outbound trips increased by 22 percent. In 2012 arrivals exceeded one billion.¹⁴
- New technologies are spreading across the world at an accelerating rate.*,¹⁵

* See Information Technology, Globalization 101, SUNY Levin Institute <http://www.globalization101.org/information-technology/>

- Since World War II the world has gained numerous international organizations – the International Monetary Fund, the World Bank, the Organization for Economic Cooperation and Development, the Group of Eight, European Union, the World Trade Organization, and others.
- The World Trade Organization reports that regional trade agreements (RTAs) have become increasingly prevalent since the early 1990s. As of June 2014, 379 RTAs were in force.*
- Membership in the United Nations has grown from 51 in 1945 to 193 in 2011.†
- Centralized control of the world economy has been increasing, as shown by a study of the ties among owners of international corporations that found that “transnational corporations form a giant bow-tie structure and that a large portion of control flows to a small tightly-knit core of financial institutions.”¹⁶

The International Monetary Fund (IMF) has produced a number of studies of economic spillovers from one country to another. From one such study: “The size and composition of spillovers across countries is one of the many issues that have resurfaced in the wake of the Great Recession. It is now apparent that events in some countries can have profound spillovers elsewhere which are not limited to their immediate neighbors but can ricochet around the globe.”¹⁷

Other IMF studies report evidence of shortcomings in policy effectiveness when sufficient transnational coordination is missing. This quote from the summary of a study illustrates this point: “In cross-border cases, misaligned incentives and lack of robust mechanisms for resolution and cross-border cooperation left some country authorities with little choice but to take unilateral actions, which contributed to the high fiscal costs of the crisis and resulted in disorderly resolution in some cases.”¹⁸

Increasingly, nature is being pulled from the external world into the world economy through activities that effectively assign monetary value to various aspects of nature. Examples of this process include investments in wildlife preserves, wilderness areas, endangered species protection, wet lands protection and reclamation, and many other forms of nature protection and management. Assigning a price to carbon dioxide to discourage emissions is equivalent to assigning a monetary value to climate stability. Markets in which nature futures are bought and sold are now as much a reality as markets for corn and hog futures.

10. Interpretive Support

In addition to the empirical data, interpretive support for an inclusive world economy is increasingly coming from economists and other experts. Michael Spence, Professor of Economics at NYU’s Stern School of Business and Nobel laureate economist, observes that national “policies (or policy shifts) are increasingly affecting other economies and the global

* See World Trade Organization http://www.wto.org/english/tratop_e/region_e/region_e.htm

† See <http://www.un.org/en/members/growth.shtml>

system, giving rise to what might be called “policy externalities” – that is, consequences that extend outside policymakers’ target environment.”¹⁹ Javier Solana, president of the ESADE Center for Global Economy and Geopolitics and Distinguished Fellow at the Brookings Institution, concludes that the nations of the world have become so interdependent that “one country’s policies, whether pertaining to work, the environment, public health, taxation, or myriad other issues, can have a direct impact on others.”²⁰ Moisés Naim, senior associate in the International Economics Program at the Carnegie Endowment for International Peace, warns that “politicians should do a much better job of explaining to their constituents’ that what happens beyond the borders of their country or city has implications for what happens inside their homes.”²¹

“The concept of economic growth captures only one component of the development of the inclusive world economy; measuring economic growth has only limited use as an indicator of changes in human wellbeing.”

Stefano Bartolini, Associate Professor of Economics, University of Siena, inadvertently makes the case for adopting the concept of an inclusive world economy with an argument that the “growth process generates extensive negative externalities which reduce the capacity of the social and natural environment to furnish free goods.” Put another way, externally sourced goods (free goods) are disappearing. As they disappear they must be replaced with produced (not free) goods. Since produced goods have an assigned value, they are counted as wealth.²²

11. Implications for Evaluating Prospects for Economic Growth

Discarding the concept of externalities and adopting the concept of an inclusive world economy gives us a different set of propositional statements on which to base an evaluation of prospects for economic growth in the current period. In general, this view elevates the importance of defining and observing global processes and discovering and measuring all of the outcomes associated with those processes. It leads us to describe and explain the activities and trends we observe in the world and the likely consequences with reference to system components, system processes, and system development outcomes.

Derivative propositions associated with economic growth include:

- The concept of economic growth captures only one component of the development of the inclusive world economy; measuring economic growth has only limited (and thus error prone) use as an indicator of changes in human wellbeing.
- The products and byproducts of global processes are distributed across the entire world economy through the network or relationships that make up the world economy; the products and byproducts of so-called national economies are only components of global products and byproducts.

- Problems and solutions associated with supply and demand, economic activities and growth, societal outcomes, and conditions in the world of nature are properly defined as aspects of the development of the inclusive world economy
- The global rate of economic growth in the current period is determined by world economy level processes; the global rate is not the sum of national rates; national rates are components of the global rate.
- The global rate of economic growth in the current period constrains national and local rates of growth; national policies affect the distribution of global economic growth much more than they affect the global rate of economic growth – to a great extent, one nation's gain in economic growth is another nation's loss.

This conceptualization transforms the options available to the world's institutions. Unilateral action is less efficacious. The information derived from defining processes as national and local becomes less informative for creating public policies for enhancing and protecting human welfare; public policies based on national and local measures of economic performance can even be counter-productive.

12. Technological Solutions in This View

Technological optimism is much more difficult to maintain with the concept of an inclusive world economy. Technological solutions in this view are responses to problems that are defined with an artificially limited scope; the consequence is that technological solutions are limited solutions and often illusionary solutions.

Particular institutions and organizations of people can use technologies to manipulate the distribution of harmful outcomes and developments to other institutions and organizations of peoples, but they cannot eject them from the inclusive world economy. Nor can they eject consequences of the actions of other institutions and organizations of people from the inclusive world economy. Everything done travels through the network of relationships among institutions, groups, and ecosystems that make up the inclusive world economy; everything done contributes to the historical development of the whole.

Within an inclusive world economy, nothing can be added or taken away through the use of technology. Technological fixes (including resource substitution) only change the symptomatic form of a problem so that it displays in another time and place in the world economy and/or in another form. They only create the illusion in a given place that certain effects of human activity have been safely contained in an external part of the world. They can push some consequences off into the seemingly external future, but, unfortunately, the future quickly becomes the present; its function as an illusory externality dissolves and yesterday's exiled consequences come back into our midst.

13. Prospects for Economic Growth in an Inclusive World Economy

The inclusive world economy view leads to a conclusion that prospects for economic growth are now much more constrained than during the expansion phase of world economy

development. The reason is that the key drivers of economic growth during the expansion phase are disappearing and barriers to economic growth that did not exist during the expansion phase or existed only in limited, manageable forms are now emerging. These new barriers are formidable and resistant to technological fixes.

Economic growth consists of more or less simultaneous increases on the supply and demand sides of the world economy. It takes place when owners of production facilities increase the volumes of goods and services they produce and introduce into the world's markets and businesses and consumers buy those additional goods and services. Increases on the supply and demand sides are usually out of sync, but over the long run both have to increase by close to the same amount.

In the normal course of things, investors and owners of businesses make responsive investments to meet demand that exceeds available supply or make anticipatory investments, betting that demand to match those investments will develop in the near future. On the other side, businesses and consumers increase demand by making additional purchases using current additions to income or by borrowing against anticipated future income growth.

The rate of economic growth is determined by drivers and barriers on the supply and demand sides of the world economy. Economic growth increases when the power of the drivers of economic growth exceeds the power of the barriers. When investors, business owners and consumers perceive that this is the case, they engage in activities that grow the world economy. When they perceive that the barriers outweigh the drivers, they pull back on those activities. In the worst case, existing investments are demobilized and business and consumer incomes are shifted from purchases to various forms of savings.

Perceptions get a lot of attention from economists and investment experts, but perceptions cannot go far afield for very long because objective factors always force corrections to misguided perceptions. Over the longer term, objective factors are the relevant drivers and barriers to economic growth.

14. Drivers and Barriers During the Expansion Period

During the expansion period of capitalism the incorporation into the world economy of lands, resources, and peoples outside the system was a major driver of economic growth. That dynamic process played a key role in generating new market demand. Waves of new consumer demand were created through a process of moving communities of people away from producing goods and services for themselves (no monetary value attached) to buying goods and services in the marketplace. In this process, economic enterprises did not so much expand the volume of goods and services being produced as take over existing home and community based production of goods and services and assign market values to them.

Most visibly, this was facilitated by bringing external peoples under the control of western nations through the imposition of colonial governments and later through the formation of dominant state-client state relationships. As is well documented, bribery, laws that enable

deception and exploitation, intimidation, violence, and war played large parts in this history. Over and over, indigenous peoples were set to work transferring the indigenous resources of their own lands to the agents of imperialist nations in exchange for wages. Cut off from indigenous communities and associated production practices, and with no time left over after performing wage labor to engage in production for themselves, those peoples could only use their wages to buy the things they needed from the same or other agents of the imperialist nations. Thus, the monies paid to indigenous peoples pressed into wage work returned to the imperialist nations as new consumer demand (alongside the new flows of indigenous resource wealth).

The external world of peoples and resources was enormous in the first centuries of the era of expansion. Using their technological advantages in transportation and warfare, the emerging capitalist nations rapidly incorporated indigenous peoples and resources, fueling high rates of economic growth. For example, the slave trade mobilized the labor of millions of Africans in the Americas.

One estimate is that 6.5 million immigrants survived crossing of the Atlantic to the Western Hemisphere between 1492 and 1776. Of those, only 1 million were Europeans; the remaining 5.5 million were enslaved Africans. On average, 80 percent of these enslaved Africans were put to work as field-workers.²³ By the end of the slavery era, almost 12 million Africans were brought to the New World.²⁴

Slaves did not become consumers because they were not paid in money. However, the products of their work were sold on capitalist markets by the slave owners. Rapid income growth turned slave owners and ancillary shop keepers and craftsmen into consumers of goods produced in Europe and North America and into suppliers of the raw materials and food items that fueled the growing industrial and commercial centers of Europe and the Americas.

Another example of the role of external peoples and resources in driving economic growth was the economic impact of the flow of gold and silver from the Americas to Europe. According to one source, "Imported gold and, more significantly, silver probably affected the European economy more than all other foreign goods ... the bullion bonanza ... increased the profits of merchants selling on a rising market, thus greatly stimulating north European capitalism."²⁵

In that era of expansion, insurmountable barriers to economic growth did not exist in practice or in theory. Input shortages, political upheavals, wars, and supply and demand imbalances did produce interruptions to economic growth, but the worst case was (and seemingly would always be) a temporary and localized slowdown in economic growth. Untapped stocks and deposits of resources and populations of potential workers and consumers were just an explorer, a bribe, a military campaign, or a technological advancement away. Restoring the balance between supply and demand was just a policy intervention away. Growing both the supply and demand sides of the world economy was assured.

15. Disappearing Economic Growth Drivers and Emerging Barriers

The efficacy of incorporating external peoples and resources to drive economic growth in the world economy began to diminish in the 20th century. By the end of the century, the Western capitalist world had virtually completed the work of bringing everything and everyone on the planet into the world economy. Today, almost every square inch of the earth's surface and every resource deposit above, below and on the earth are now under the control of a nation or an agreement among some set of nations; almost every person must answer to a national government; and almost every person participates in markets directly or indirectly to obtain a livelihood. The only frontiers (territories not yet fully incorporated) left are parts of the arctic regions, the bottoms of the open seas, and outer space.

The disappearance of a world of people and resources that is external to the world economy disabled the most powerful drivers for supply side and demand side growth. The burden of generating economic growth now falls almost completely onto governmental policy interventions that boost consumer incomes and facilitate technological innovations that expand access to resources and reduce resource use inefficiencies.

On the demand side of the world economy very few communities of people who live mainly by producing goods and services for themselves still exist, and those that do are very small. Today, new consumers are added almost exclusively through births.

This is an incremental process of consumer demand growth that is not keeping pace with the world's growing production capacity because most births are in lower income families with very little purchasing power. In most cases, each new addition to the world's population adds only a minimal level of consumer demand.

On the supply side, the growth of the nation-state system to encompass the entire earth has mobilized enormous resources for developing and implementing production technologies that displace human labor. For much of the expansion era, a large part of the energy used in producing goods and services came from humans, so increasing production required increasing the number of people at work. This was the supply side problem that slavery addressed. As slavery ended, wage workers provided more and more of the human energy used in production processes. Wage workers became consumers, so as production expanded consumption could expand as well.

Today, every national government and many subnational governments use tax money to subsidize and drive the development of new production technologies. Those efforts have increased the pace at which production technologies that displace human labor are being developed and implemented. These advances are rapidly destroying the role of supply side growth in driving demand side growth. They ramp up the production of goods and services much more than they ramp up consumer incomes.

Alongside the disabling of classic economic growth drivers, barriers to economic growth have emerged that are neither temporary nor localized; they are global in scope and epochal. And, they are formidable and becoming more resistant to policy interventions and less amenable to technological fixes with each passing year.

These barriers are the finiteness of the earth, entropic constraints, and insecure investment environments.

16. Finiteness of the Earth

The primary impact of the finiteness of the earth is on the supply side of economic growth. We have now reached a point in time when the list of resources essential to production that might become temporarily or permanently scarce, and thus much more expensive to exploit, is getting quite long. Among these resources are fossil fuels, fresh water, fish stocks, arable land, and water, land, and air masses that can safely absorb and disperse the byproducts and waste of global affluence.

We may succeed in developing alternatives to resources currently in use as they become more scarce, but transitions from currently used resources to alternatives cannot drive economic growth to the same extent that exploiting newly acquired, easily exploited resources can. One reason is that input substitution too often requires a wide-ranging overhaul of industries, technical skills, legal environments, and consumer behaviors. This absorbs much of the value of the substitute resource.

We are facing this reality now, with the efforts to replace fossil fuel vehicles with vehicles powered by electricity or hydrogen. Not only does this effort require oil and gas companies to write off the value of oil and gas fields and associated equipment, it requires training a new generation of automotive technicians, dismantling pipelines and storage tanks in a way that protects the environment, massive investments in whole new industries, and changes in the way people operate and maintain their cars, trucks and other vehicles.

17. Entropic Constraints

Every form of wealth degrades as time passes. Some forms, like perishable food, degrade quickly, others are more durable. The scientific term that captures the notion that the degradation of the world's wealth is unstoppable is entropy. A nice overview of this issue was written by John Scales Avery in 2012.²⁶

Entropy constrains economic growth through its impact on decisions about which goods and services to produce and on how we use the wealth we create. The items that make up a stock of wealth must be repaired or replaced at the rate at which they degrade. Otherwise, the stock of existing wealth diminishes. Thus, to maintain the public and private stocks of wealth at current levels, a portion of the economic activities that make up an economy must be devoted to repairing and replacing items of wealth that are being lost to degradation and destruction. For the world economy, repair and replacement costs have become a substantial and growing barrier to economic growth.

This barrier has emerged because the stock of global wealth has been growing for several hundred years and increased enormously in the last century. Most visible to us is the accumulation of manufactured wealth – hundreds of millions of automobiles, thousands of skyscrapers, hundreds of thousands of production and service facilities, endless miles of

roads and bridges, hundreds of millions of homes and household appliances, billions of personal items, etc.

This stock of wealth is enormous, so the volume of economic activities that must be devoted to offsetting degradation and destruction is very large. More importantly, that volume is growing rapidly because the global stock of wealth is aging and because much of that stock of wealth was not designed to endure the extreme weather events that are now upon us or to endure the destructiveness of riots and wars.

Human creations are not the only kind of wealth that we must devote our income to maintaining, and possibly not the most costly to us. With each passing year, we are learning that the earth's atmosphere, oceans, ecosystems, and species are increasingly a part of the stock of global wealth that must be maintained. Human activity has become such an enormous source of "damage" to these parts of the earth system that we must now count these things as wealth and invest income in maintaining them. Even the world's most formidable mountain (Everest) now has maintenance costs because it has become an economic asset that is used and damaged by human activity.

Maintaining this enormous stock of human made and natural wealth consumes a very large and growing share of the world's annual production of goods and services. The negative impact on economic growth is clear. The larger the proportion of total economic activity that must be devoted to maintaining current levels of wealth, the smaller the proportion that can be devoted to providing each new member of the global population with an average share of wealth.

On the supply side, investments in developing resource substitutes, exploring for new resource deposits, and constructing new production facilities are constrained. On the demand side, businesses and consumers are increasingly forced to devote more and more income to repairing and replacing the cars, computers, washing machines and other existing goods rather than to purchases that actually add to their wealth and wellbeing.

18. Investor Insecurity

The world economy's basket of acceptable production investment opportunities is shrinking. In the first place, the slowing rates of demand side and supply side growth discussed above are reducing investment opportunities. In addition, the remaining investment opportunities are becoming more and more risky. Also, rising inequalities of income and wealth are increasing the amounts of money and other liquid assets being held by investors that must be matched with suitable investment opportunities.

In recent decades, risk levels for production investments have been rising and investors have been moving their investment funds into non-production investment areas in the search for good returns and reasonable risk (government securities, real estate speculation, intangible assets, even cash).^{*} The cause of this shift is an accelerating breakdown of the

^{*} "Right now, for instance, regulators across the globe are warning about inflated prices for potentially risky assets ranging from U.S. junk bonds to the debt of economically shaky countries such as Spain and Greece to real estate in China and London." See Lisa Abramowicz, "Watching for Bubbles," *Bloomberg* <http://www.bloomberg.com/quicktake/watching-bubbles/>

effectiveness of the predictive tools and strategies used by investors to estimate levels of risk and return in the production investment arena. This breakdown can be traced to four key factors: a) global climate change, b) the intensification of competition among producers of goods and services that has come with globalization, c) the increasing rates of innovation on both the supply and demand sides of the world economy, d) the continuing failure of governments to create conditions for economic growth.

“Economic growth can and will continue to take place, but it will not follow the pattern established in the 20th century.”

19. Conclusion: A Slowing Rate of Economic Growth and Unprecedented Challenges to the Human Imagination

The concept of an inclusive world economy does not completely fit the world economy as it is today. The incorporation of everything and everyone into a single, all-inclusive economic system is not fully complete. This process is, however, sufficiently complete to warrant abandoning the concept of externalities and adopting the inclusive world economy concept as the better tool for analyzing the dynamics of change in the world today.

Remnants of the expansion phase of the development of the world economy are still with us, so the constraints on economic growth are not total. Economic growth can and will continue to take place, but it will not follow the pattern established in the 20th century. Over the long term, the world's economic growth rate will decline. It is even likely that the world economy will enter more and more prolonged periods of economic contraction, periods in which the production of wealth does not keep up with population growth and the degradation of existing wealth, periods when the global stock of real wealth actually declines.

No one wants this conclusion about the future of economic growth. It is very difficult for any of us to imagine a world in which peace prevails, in which efforts to move more and more people out of poverty can succeed, and in which life in the middle class can be truly satisfying without a high rate of economic growth. It is much easier to imagine that a world without sustained and substantial economic growth is a world that is doomed to a fate of rising poverty, inequality, and conflict.

We imagine this fate is the only possibility because we are informed by an economic paradigm in which economic growth is a necessity for human wellbeing. That paradigm constrains our vision. It does not allow us to imagine an acceptable world in which economic growth is slowing toward zero because it assures us that the link between economic growth and increasing human wellbeing is unbreakable. Yet, we have very likely entered such a period of history, so we must be able to imagine that humans can still thrive. We must develop imaginations that can invent the institutions for a world without economic growth. Trading in the concept of externalities for the concept of an inclusive world economy can help us do that.

Author Contact Information
Email: jlunday@peoplepc.com

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