

UNST 124g spring 2012

Brilliant, Pinky! Oh, no, wait. What if we want to use a plan that works?

1 introduction

Governance and economics have been close at hand in many of our conversations this term. The present readings introduce some novel ways of thinking about economies and the socio-environmental context in which they exist. It is clear that the resources on which modern societies depend are finite yet Earth's human population continues to grow. It may be the case that the economic models of the past will become inadequate as Earth *fills up* with people. If this is the case, then we seem to have two options, continue on with the status quo as economic and ecologic conditions around us degrade (at rates we cannot predict) or try something new. As some of you have probably discovered with the ecological footprint project, trying something new that is large enough in scale to make a difference is not easy. Yet that is what both Beddoe et al. (2009) and Daly (2005) ask us—all of us—to do. Chapin et al. (2009) made a similar request when setting out their ecosystem stewardship model. We have read other perspectives as well this term. Both the editors of *The Economist* (2011) and Socolow and Pacala (2006) suggest that technological innovation can overcome the limits to growth imposed by finite resources.

Economics, most broadly, is the study of production, distribution, and consumption of goods and services. Macroeconomics involves the behavior of entire economies, including wealth, labor, and fiscal policies while microeconomics concerns the behavior of and interaction among the basic units that together define an economy, including individuals, households, and markets. An economy is the product of processes operating at both micro and macroeconomic scales, in a given geographic (landscape, ecology, resources, climate), historical, and technological context. In the purest sense, market-based economies are defined as economies in which goods and services are exchanged according to supply and demand and both capital and labor are free to move and adapt to the changing market as necessary. In contrast, a palace economy would be directed by a central administration, toward which goods (wealth) flow for redistribution. Ancient economies of Egypt, Mesopotamia, and the Levant were of this type but over time (by the Late Bronze Age) the palace economies transitioned toward market economies.

Every conversation about meeting the challenge of sustainability involves markets. A market, as defined in the typical university economics class, is a any framework for the exchange of

goods (including information) and services between sellers and buyers. Markets range from physical retail venues (for example the Farmers Market here in Portland) where goods are traded directly between producer and consumer, to intermediate markets where goods used to produce other goods and services are traded, to international currency, commodity, and stock markets (as we discussed last term in the context of the Great Depression and the agricultural collapse on the North American high plains), to markets created to regulate externalities (like pollution). An externality is a cost or benefit that is not reflected in market prices and is incurred by parties not involved directly in the market exchanges responsible for the cost or benefit.

Economic growth is the change over time in the value of goods and services produced by an economy. We see this quantity reported in the news as the gross domestic product (GDP). The per capita GDP is sometimes used as a metric for standard of living but it can be misleading because it omits natural capital, knowledge, institutions, and other attributes that together define the overall wealth of a nation (recall that we have examined metrics and international rankings that embrace qualities such as access to health care and education). Changes in productivity are linked to economic growth. Starting with the Industrial Revolution, the substitution of machine labor—made possible by the abundant energy available in fossil fuels—for human (and other animal) labor resulted in productivity gains (more items made in less time) and GDP growth. Innovations in technology, transportation infrastructure, and agricultural inputs carry that trend forward. Economists theorize about growth in several ways and you really need to take a macroeconomics class (or several classes) to study those theories in an adequate way. Herman Daly, the author of one the present readings, is a professor of economics who argues that rather than being always beneficial, growth can be detrimental to economies. During his time as a Senior Economist in the Environment Department of the World Bank, Daly worked on policy guidelines related to sustainable development.

2 reading questions

The answers to most of these questions come from more than one place in the readings. Be sure read each paper from beginning to end, highlighting important and interesting material, before you start answering the reading questions.

1. Define *socio-ecological regime* and describe what a *regime shift* means in this context. Be sure to include the concepts of WIT and *maladaptation* in your answer.
2. What does *uneconomic growth* mean?
3. Beddoe et al. (2009) and Daly (2005) describe two socio-economic regimes: *empty world* and *full world*. Please describe these and summarize the challenges presented by the full world regime.
4. Beddoe et al. (2009) predict a global socio-ecological crisis. Is that crisis avoidable? Is that crisis necessarily catastrophic? Please support your answer with material from the readings (including the Counterpoint to Daly's article).

3 references

Beddoe, R. and 12 others. (2009). Overcoming systemic roadblocks to sustainability: The evolutionary redesign of worldviews, institutions, and technologies. *PNAS*, 106 (8), 2483-2489.

Chapin, S. and 16 others. (2009). Ecosystem stewardship: sustainability strategies for a rapidly changing planet. *Cell*, 25 (4), 241-249.

Daly, H. (2005). Economics in a full world. *Scientific American*, 293 (3), 100-107.

The Anthropocene: A man-made world. (2011). *The Economist*, 399 (8735), 81-83. <http://www.economist.com/node/18741749>

Socolow, R. and S. Pacala. (2006). A plan to keep carbon in check. *Scientific American*.