

# **FUTURE-ORIENTATION: GLOBAL PROCESSES IN THE 21<sup>ST</sup> CENTURY**

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## **Summary**

Future-orientation is a half-way house between future blindness, and the arrogance of prediction. Based on a reading of world system history, and an application of evolutionary concepts including those of variation, and selection, it traces a set of world system processes – rather than mere trends - that are path-dependent but are still mostly a work-in-progress, with the view of projecting their trajectory over the coming century or so. The questions for which some answers are now becoming available include the next phase of the information economy, the future of global leadership, the prevention of global war, the prospects for democratization, the outlook for the world community, and the evolution of the world system.

## **1. Future-Orientation**

### **1.1. Aims of Future-Orientation**

The purpose of this chapter is to illustrate ways in which “world system history” – in particular as presented in contributions to this volume – might help in thinking about the future of world organization. It is intended to document, and foster, future-orientation, that is, the ability to integrate elements of long-term analysis of world developments into the consideration of major global problems. The contrast here is with prediction, a more

demanding discipline, that requires methods and procedure capable of identifying singular events and that is not attempted here.

It is also argued that a ‘world history approach’, one grounded in relevant knowledge of the past, can help frame questions about future developments in a more productive way. Such an approach is neither intended to, nor is capable of, predicting individual events, or serve up thick descriptions of developments of most individual societies. But it is capable of making lean statements about the several processes that make up, and animate the world system, viewed as the social organization of humanity.

To quote from the “mission statement” of the volume on “World System History”:

“The nature of world system history suggests that its students can learn much from world history and the more traditional social sciences, and can also contribute to both. Grounded in the social sciences, with a self-conscious employment of concepts, data, and explanations, world system history is qualified to impart both the logic of empirical analysis and a less parochial attitude that embraces horizons that extend to all humans. Grounded in historical concerns, world system history is qualified to impart the longer-term and more fully integrated concerns of humanocentric analysis. *Finally, its strongest feature might well be its capacity for future-orientation that is founded not only upon the commonsense insight that ‘history matters’ but also in the more up-to-date and sophisticated consideration that humankind has experienced developments and processes that show continuity, and that such knowledge might yield important pointers to the future.*” (*World System History*).

There is no question that sound explanation and effective prediction are as crucial to understanding of social affairs, as they are in our grasp of the physical world, and future-orientation is a particular form of handling information about the future. Predictability is the hallmark of a stable and well-functioning social system, and attempts to foster future-orientation in respect of human affairs are not a sign of hubris, as is sometimes thought. As just noted, they are not about predicting singularity but rather an attempt to handle processes. Future-orientation is an attempt to remedy future-blindness – defined by N. N. Taleb (in “The Black Swan” 2007) as “the natural inability to take into account the properties of the future” – and/or to counteract the “end-of-history” illusion – which leads people to underestimate how much change lies in the future - without succumbing to the temptations of ‘the arrogance of prediction’.

Assumptions about processes and institutions shaping the state of the world govern decisions with long time horizons. Long-term thinking has become more than ever important as the human life expectancy has been steadily expanding over the recent past, such that those already born, say around the year 2000, may expect to live for most of the new century, and deserve some idea as to what to expect. Long-term thinking is vastly strengthened by institutions: the stronger the global system, the more predictably it is likely to function. Perhaps most important of all, the ability to think effectively about long-term developments is the foundation of policies that avoid the trap of short-term gimmicks and

focus on real problems. The default position – assuming world organizational arrangements to remain unchanged – is always wrong.

Undergirding future-orientation in respect of world organization is the premise of *continuity*: the assumption that the contemporary world system is the most recent form of mechanisms and processes that have lent organization to the affairs of humans in the past. That is, the assumption that the world system *process* to-day is the same as that of four or five thousand years ago and, by implication, will continue along the same path into the future. That is not to say that what is observed in the 21<sup>st</sup> century is the same as what could be seen earlier; in fact the social organization of the human race then was obviously much smaller, essentially rudimentary, in an embryonic stage. But the changes it undergoes follow the same pattern.

Supporting that position is the assumption of path dependence for global change processes. Path dependence is the dependence of outcomes on the path of previous outcomes, rather than simply on current conditions. In simple terms, it means that “history matters”, an obvious but non-trivial, and frequently neglected, position that is relevant to this theme. More specifically, it matters because the adoption of new techniques or institutions produces increasing returns, and raises the costs of abandoning them. It highlights ‘sensitivity to initial conditions’. The world system is strongly path dependent because its outcomes in any period depend on their order (or phase sequence) (hence also do not require a ‘thick description’). Path dependency helps to clarify two important puzzles: the lock-in character of the world system (that is, its continuity), and the successive victories for the “oceanic coalition” in five global wars of last millennium (cf. Section 3.1).

While the world system has been, since the initiation of its possibility some five millennia ago, and remains, a work-in-progress, yet to be fully accomplished, its processes continue to unfold. Today’s world system is significantly larger, more populous, covers all of the earth, and is more interconnected than it was one or several millennia, ago. But the principles of its organization remain the same and serve as the basis for the discussion of future-orientation. That is what is meant by a “one-world system” (as distinct from a “comparative world-systems”) model.

The path of nineteenth century scientific thought demonstrates how ‘history matters’: the linkages between the history of the Earth, the history of life, as well as the story of humanity. Charles Lyell’s “uniformitarianism” (*Principles of Geology*, 1830-1833) pioneered in denouncing the conventional wisdom of “catastrophists” and asserted that existing processes and the laws of nature are sufficient to account for long-term changes in the Earth’s structure. Charles Darwin’s evolutionary synthesis (*The Origin of Species*, 1859) centering on the essential concepts of variation and selection: took up Lyell’s views: that change is incremental (rather than the result of catastrophes), naturalism, that asserts the uniformity of nature (“The present is the key to the past”); gradualism, and the necessarily long time scales of the relevant history. The result was a story of life on earth, and the conceptual foundation for biology. In parallel, Auguste Comte (*Cours de philosophie positive*, 1843, an account of social evolution), John Stuart Mill (*A System of*

*Logic*, 1843) and also Herbert Spencer (*First Principles*, 1862, with his own ‘law of evolution), developed arguments to explore sequential processes (laws of succession) to help illuminate the history of social organization of humanity. These arguments shaped a century of scholarly discourse and they remain relevant. They all assumed that existing processes acting in the same manner and the same intensity are sufficient to account for social change.

## 1.2. Trend and Process

At mid-20<sup>th</sup> century, Karl Popper, a philosopher of the social sciences, produced a sharp critique of attempts to use history for mapping the future of mankind. In a withering attack on *The Poverty of Historicism* (1957), referring *inter alia*. to Plato, Vico, and Marx, he declared the impossibility of a ‘law of evolution’, and denied any merits to attempts to view human history in terms of a succession of stages, or phases. He argued that the evolution of life on earth is a unique historical process, and its description does not constitute a law, but merely a singular historical statement, in respect of which there can be no generalization (as some historians might agree), hence no prediction. Popper’s argument was first formulated in 1945, while the ‘second Darwinian revolution’ (the ‘evolutionary synthesis’) was still in progress (1937-1947).

Popper recanted his original position regarding Darwinism by the 1970s. But his writings did also cast a sharp analytical light on another basic distinction governing that debate. He was right to argue that ‘historicists’ used the term ‘trend’ in ways that lacked precision. He pointed out that trends such as population growth, while obviously useful, and important, are descriptive, and not laws, hence unacceptable as a basis for scientific analysis. Predictions cannot rest solely on the existence of trends. They call for universal laws that he defined as asserting the impossibility of something or other (think of evolution as impossible i.a. in the absence of – definable – initial conditions favoring it). Evolution itself is a process, or a cascade of evolutionary processes that center on mechanisms of variation and selection. Process is a sequence of events that is programmed. Theory decodes that program. That is, trends must be backed by theory that includes laws, or law-like statements.

It is of some interest that Popper, who in *The Poverty of Historicism* prominently denounced the ‘law of evolution’ proposed, in the penultimate chapter of that same book, as an alternative,

an “institutional theory of progress” that allows the modeling of dynamic successions of events – that is, processes- not by reducing them to psychological propensities (because “the human factor is the ultimately uncertain and wayward element in social life”) but by recognizing that “the mainspring of evolution and progress is the variety of the material which may become subject to selection”. While evolution may not be identical with progress, the kernel of Popper’s argument points to the essentials of a theory of social evolution.

In tracking the future, trends must be fortified by theory. The world system requires evolutionary theory; not a recycling of Comte's or Spencer's, but one benefiting from recent advances in the social sciences that have included efforts to generalize Darwinian thought around the kernel of variation-selection and which some have described as "Universal Darwinism". Orientation toward the future of the world system calls for the formulating, testing, and deployment of an appropriate explanatory framework. While prediction is certainly possible without explanation, scientific prediction (better called 'forecasting') does require it.

An example of a largely a-theoretical enterprise is *Global Trends*, the expert (*not* intelligence) studies, with a forward perspective of 15-20 years, undertaken, since 1997, every five years by the U.S. National Intelligence Council. While tracking trends, and seeking out the views of experts in the United States as well as from other countries, they rely heavily on ad hoc scenario-building. The first of these reports, *Global Trends 2010*, written by a leading economist, was criticized for missing "catastrophic institutional and scientific failures" (including 9/11, the Iraq war, and the financial crisis of 2007-8).

*Global Trends 2030* opens with the description of four "megatrends", including 'diffusion of power' (as well as demographic trends, growth of the middle class, and food, water, and energy problems). It examines a number of "game changers", "potential Black Swans", and "distinct pathways" but has no mention of rising leading sectors that might change the path of the global economy, and offers no comment on democratization as such (except for a passing reference to China). It predicts likely changes in power distributions (by 2030, "Asia will have surpassed North America and Europe in terms of global power") but has nothing about community building. For the United States, it declares the inevitability of "relative decline", "most likely" to the status of "first among equals". "By 2030, no country, whether the United States, China, or any other large country, will be a hegemonic power".

Some political scientists have argued that "research aimed at political prediction is doomed to fail". The present chapter does not offer predictions of individual events, but proposes that controlled reasoning about the future is one dimension of rational behavior. It seeks to avoid a "heavy-handed deterministic stance toward history" (Philip Tetlock ) but does not, *a priori* exclude the possibility that larger-scale, well-defined, and observable, world system processes may be shown to exhibit self-organization, helping the observer to gain a measure of future-orientation, that in its turn, needs also to be exposed to "independent standards of empirical accuracy and logical rigor".

### 1.3. Cases

This chapter takes up for review six cases, to suggest ways in which world system history may aid future-orientation. These cases will draw on articles that are part of the present "World System History" volume, and on recent research on world system processes. The following questions will be considered:

1. What might be the nature of the next wave of innovations, taking off in the third/fourth decades of this century, creating new leading industrial-economic sectors?
2. What factors will affect the next phase of the long cycle of global politics that in the past centuries has entailed global warfare?
3. What is the direction of global political evolution?
4. Might democracy be expected to become the universal form of socio-political organization?
5. Is there a movement toward a world community?
6. A work-in-progress, how complete is the world system at this time?

In each case, the target of the inquiry will be a world system process. Path-dependent *processes* (event-sequences) may be reckoned in *periods*, each of which may be represented by an (S-shaped, or sigmoid) learning curve, and they may also be partitioned into four sequential *phases*. All such processes, in turn, may be thought of as exhibiting a *program*, a four-phase evolutionary learning algorithm (generate variety, cooperate, select, regenerate) that is a variant of Darwin's basic mechanisms of population thinking (variation and selection) but may also be visualized as an analog of market competition and possibly election cycles.

The first two of these phases are preparatory and serve as initial conditions of that process; the third is the decisive one and fourth executes, such that the effects extend to the two preparatory phases of the next period. The program in turn concerns system-building, that is institutional change to cope with *emerging problems*, hence a potential for change at several levels of organization. In sum, a wide-ranging, if systematic, exploration of the potential for global institutional development in conditions of *evolutionary potential* (that is conditions that favor variety generation, cooperation, selection, and regeneration). Basic assumption is that system time is not continuous but discrete, reckoned in periods and phases. All world system processes are self-similar, and nesting in an interdependent relationship, with a power law governing it.

In each case, the question will be: what is the problem under investigation, and what can be asserted about its future development? As the analysis proceeds, connections between processes may be discussed, and a more complex pattern comes to light. But at no point is this a comprehensive picture of world developments.

## **2. Leading Sectors of the Global Economy**

The first example of this future-oriented analysis is the following question: what might be the expected nature, timing, and future location of the next set of leading sectors of the emerging global economy? The question is an important one, because the success, and the location of the next set of those leading economic sectors will have greater future significance than the absolute size of national economies assessed in GDP terms.

There is no consensus answer to that question. What can be done at this point is to tease out the suggestions implicit in the model of "global economic evolution", that unlike some

other formulations reaches back to about 1000 AD. Table 1 presents its most recent period, following upon the Industrial Revolution, and labeled the ‘Information Economy: the set of four waves of leading sectors (K-waves, period ~60 years each). Currently, (2013) the global economy, in which since about 1850 ‘information’ is the chief driver, nears the end of its third wave, and the fourth one is now in sight.

<b>K-waves (nos, take-off)</b>	<b>Information economy (a period of global economic evolution): leading sectors:</b>	<b>Innovations (examples)</b>	<b>Lead economy</b>
17, 1850	Electric power, chemicals, steel	Telegraph, North Atlantic cable	USA
18, 1914	Electronics, autos, aerospace	Radio, television; New forms of transportation	USA
19, 1972	Information industries	Computers, mobiles, World-wide net	USA
20, 2030	Alternative energy; nanoworld	“decarbonized economy” “global brain”	

Source: Based on “Emergence of the global economy”. Table 6. For alternative approaches see *Kondratieff waves as global social process, Kondratieff Waves; Dimensions and Prospects at the Dawn of the 21<sup>st</sup> century*.

Table 1. Global economic evolution

Analysis thus presented suggests that the next K-wave (K-20) will consolidate the achievements of the current period of global economic evolution labeled “information economy” in Table 1, by working out the full implications of the world-wide net, producing a ‘wired world’ and possibly enabling a ‘global brain’. Some see nanotechnology and biotechnology as the bases of new leading sectors in a “molecular” era; others point to “digital fabrication” (3-D printing) as revolutionizing manufacturing by ending mass production, and turning ‘data into things and things into data’. In turn, the consolidation of the “information economy” is a pre-condition for the emergence of a full-fledged global market place. Space enterprises do not seem to be ready yet for prime time, on the scale of a leading sector.

More specifically, considering that this Information Age began with the industrialization of electric power, the pinnacle of the Industrial Revolution, and led the world towards a vast increase in energy use, that in turn created problems that are changing the world’s climate, it would be only fitting if the next step in shaping of a viable future were to be

“decarbonization”, a recasting of the world’s power industries into a clean mode that maximizes the use of non-fossil fuels.

What is the likely timing of that wave? When might its start-up be expected? Table 1 suggests 2030, and while that is obviously arbitrary, the onset of a new surge of leading industries may be approaching in the decade, of the 2020s, some five decades since the dawn of the computer age, and set to continue well past the mid-21<sup>st</sup> century, to say 2090.

The probable central location of the next wave (K20) is the United States because it is the favored entrant in this race, inter alia. on account of its contribution so far to the Information Revolution. But at this late stage of that era, the center of these developments might well be more widely distributed than in the past. China, that is currently the largest participant in the internet also recently became the world’s greatest emitter of greenhouse gases, and is staking out an important lead in the search for clean power sources,. In 2012, energy experts were anticipating that by 2030, China’s electric power generation from renewables might overtake that from fossil fuels, “an astonishing transformation”, an “industrial energy revolution” that could lead to a “decarbonized” economy by 2070.

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## Biography Sketch

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