



Towards an Understanding of Global Crises

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Abstract

This paper offers some elements for the construction of a theory of global crises. It distinguishes between man-made crises and human-induced crises. The conceptual framework developed draws upon the ideas set forth by Douglass North in his explanations of the historical process of economic change and by Ronald Heiner in his critique of the conventional rationality assumption. As case studies for the framework developed here, the paper discusses three of the most conspicuous global crises: the environmental, the demographic and the financial crises. In the case of the environment a brief discussion on current hydric and energy crises in Brazil is also offered.

1. Introduction

The world is traversing a dangerous and unprecedented period where several processes find themselves at critical stages. These emerging crises are of a global nature and their coincidence in time makes them even more threatening than they would be in isolation. I will single out three of these crises that are at a well advanced stage and whose presence, despite the fact that little action is being taken in their regard, is generally well recognized. These are the environmental, the demographic and the financial crises. I will not enter into a description of them at this point. I will just observe, in the case of the financial crisis that, although some may argue that this crisis has been surmounted, there are numerous signs that it is yet unfolding. At any rate, it is clear that the fundamental causes of the global financial disorder have not yet been addressed.

There are other potential crises looming in the future, for example the shortage of resources that is essential for the survival of human civilization (such as foodstuffs and fresh water) or the increasing disparities in social and economic conditions prevailing within and among countries. This paper does not pretend to compile a catalog of crises but rather intends to offer some contribution towards an understanding of the underlying causes of this complex of crises and some initial reflections on how we can deal with them.

This paper takes the view that the several crises currently affecting the world today, including the environmental, the demographic, and the financial crises, demand a unified explanation. They are not just interconnected in more or less subtle ways but especially share common underlying causes. First of all, these crises are man-made, the consequence of human and social action. We will also argue, in what follows, that the reason why these crises have not been mitigated and may yet fail to be averted lies in the inadequate response

of the global world system and, in particular, the failure to build suitable institutions to deal with them.

The paper consists of an introduction and four other sections. Section 2 dwells briefly on the nature of crises, distinguishing between man-made and nature-induced crises. It establishes that the global crises we are interested in are all man-made crises. Section 3 presents the seminal contributions of Heiner (1983) and North (2005) that constitute the basis upon which our theoretical framework is built. The basic idea is that uncertainty, as originally defined by Knight (1921), underlies the behavior of individuals as well as societies. Section 4 builds upon these ideas in order to offer some elements towards an understanding of global crises. This section also applies this framework to the environmental, demographic and financial crises. Finally, the last section offers some final comments.

“Climate change is a consequence of human actions.”

“Uncertainty is not an unusual condition; it has been the underlying condition responsible for the evolving structure of human organization throughout history and pre-history.”

– Douglass North

2. On the Nature of Crises

Crises can appear as the consequence of natural phenomena or they can be provoked by human action. Let us assume, for instance, that a prolonged and acute solar storm takes place. Such a phenomenon would severely impair air travel and the operation of communications and computer systems, creating huge disruptions to modern life and leading to a global crisis of large proportions. Clearly, the magnitude of the crisis would be related to the reliance of our modern way of life on electricity, communications and data processing. It is also clear, however, that the crisis would be caused entirely by natural processes. In other words, this would be a *nature-induced crisis* rather than a *man-made crisis*.

An important observation for our discussion here onwards is that all of the above-mentioned crises (environmental, financial and demographic) are primarily a consequence of human behavior. In other words, we are dealing with man-made crises rather than nature-induced crises. This understanding implies, of course, as per our agreement with the broadly accepted conclusion of the scientific community, as expressed in an increasingly forceful way by successive reports from the Intergovernmental Panel on Climate Change (IPCC), that climate change is a consequence of human actions.

A logical consequence of this observation is that changes in human and social behavior might, if adopted at an early stage and in a properly coordinated way, have an effect on these processes in such a way that crises are deferred either temporarily or indefinitely.

3. The Theoretical Framework

The conceptual framework adopted in this paper borrows from North's (2005) analysis of the historical process of economic change and from Heiner's (1983) critique of the conventional rationality assumption of economic theory. Uncertainty, a concept whose relevance to economic theory was first discussed thoroughly by Knight (1921), is central to this framework. In his seminal paper, Heiner pointed out that, contrary to established theory, which thrives in the absence of uncertainty, the behavior of economic agents is best explained by their response to the uncertainty that is ever present in any human endeavor. His contribution was largely ignored in subsequent years but was rediscovered by North. According to him, "the deep underlying force driving the human endeavor is (man's) ubiquitous efforts to render their environment intelligible—to reduce the uncertainties of that environment" (North, 2005, p. 4). He emphasizes as well the pervasiveness of uncertainty and the historical role the response to uncertainty has played in building social institutions. In his words "... uncertainty is not an unusual condition; it has been the underlying condition responsible for the evolving structure of human organization throughout history and pre-history" (North, 2005, p. 14). North also refines the concept of uncertainty as originally introduced by Knight and distinguishes between five types of uncertainty: that which can be reduced by increasing information given the existing state of knowledge; that which can be reduced by increasing the stock of knowledge; whose reduction requires altering the institutional framework; uncertainty arising from novel situations which requires restructuring beliefs, and; residual uncertainty that may lead to "non-rational" beliefs (e.g. magic, religion) (North, 2005, p. 17).

It must be observed that the mention of "novel situations" makes clear that uncertainty is not static and that, even as humans continuously tackle it by adding to their stock of knowledge, it does not necessarily recede. This has to do with the "ergodic" nature of our world whereby we cannot expect the future to keep repeating past patterns (North, 2005, ch.2). The preceding classification of uncertainty according to the five types hints at the dynamical process of change that North depicts in his opus. The drive to reduce uncertainty in the environment leads man to proceed to change the environment, which in turn will lead to new challenges of perception and transformation and feed a new cycle of change. Throughout this process of transformation of the surrounding environment, humans will create differentiated systems of beliefs and sets of institutions and the stock of knowledge will evolve. The institutional setup provides a set of guides and constraints not only to steer the behavior of societies but, most importantly for the long-term perspective, for determining how prevailing belief systems will be used in order to transform the surrounding environment.

In his enquiry, North distinguishes between the physical environment and human environment. In his drive to make the environment less uncertain man's action will transform both the physical and human environment. North is much more focused on the human environment, the evolving institutional makeup and system of beliefs underlying it. He argues at length (North, 2005, ch.7) that societies have largely tamed the physical environment; in his view, this "conquest" of the physical environment provides the context for the evolving

human environment and the challenges that economic and social change will face from now on. In the face of the very real environmental crisis the world faces this is, to say the least, a startling conclusion. While the framework developed by North is most useful for our analysis, we will disagree with his claim that apparently disregards the fact that transformations in our physical environment may affect it in unintended and undesirable ways.

4. Elements for an Understanding of Global Crises

Although North does not develop a theory of crises, it is clear that his framework provides us with a very convenient foundation for such an endeavor. A crisis appears whenever there is a serious rupture in the cycle that goes from a reaction to an uncertain environment to the establishment of institutions and belief systems and back again whenever novel facts arise or whenever the transformed (human and physical) environment is not properly interpreted by existing institutions or belief systems. Such a rupture could be due either to a failure of perception or understanding of the surrounding environment or a failure to adequately transform the institutional setup in order to comply with a new belief system. In the former situation we will say that a *knowledge failure* has taken place, while in the latter case, we will consider that an institutional or *governance failure* has occurred.

It needs to be stressed that crises do not take place at a precise moment of time but instead develop over time. They announce themselves subtly at first, being usually ignored at the early stage. As the crisis looms more threateningly, action may or may not be taken to counter it. Unless the causes for the crisis disappear by themselves (rather unusual), a crisis will always bring transformation of the environment, which will be either manageable or catastrophic depending on whether it was timely and properly addressed or not. Throughout the history of the world, societies have faced numerous crises and they have brought about change in either of these two ways.

The complex of crises the world currently faces is composed of crises relating both to the human and physical environments. The financial crisis, the demographic crisis and the global inequality crisis are all related to the human environment, while the environmental crisis and the resource crisis are clearly related to our physical environment. What they have in common is that they are all the result of human actions which, in some cases (though not always), have produced unintended results.

The current complex of crises is singular in that the crises composing it are essentially global in scope. Addressing them adequately would require a sort of global coordination and cooperation which has not been witnessed so far. It is certainly the case that these crises are rather well understood and that, from a scientific or technical viewpoint, there are numerous proposals for handling them. In that sense, we cannot say that the crises are being fueled by a knowledge failure. It is rather a case of institutional failure, which could be more properly termed a failure of *global governance*. As pointed out by Marien (2011), global governance is a popular term; it must be noted, however, that the authority of the global institutions that have progressively appeared since the late 19th century is still quite constrained by national sovereignty.

In the following three subsections we will engage in a brief discussion of three well-known crises. It must be kept in mind that the purpose of this discussion is not a thorough presentation of these processes but rather placing them in the context of the previous theoretical framework.

4.1. The Environmental Crisis

Global warming, the decrease in biodiversity, the acidification of oceans, ozone depletion in the stratosphere, and deforestation are some of the most notorious manifestations of the environmental crisis. Other measurable and threatening indications of this crisis, themselves consequences of the aforementioned more fundamental signs, are the melting of polar caps and glaciers, the rise of oceans, the deterioration of water quality worldwide, and the increasing severity of weather events. Despite all the technological advances achieved by mankind, our welfare and the very existence of our species are still dependent on a stable physical environment in the planet we currently inhabit. It is a well-recognized fact that the continuation of present environmental trends together with the exacerbation of its manifestations will have very serious consequences not only for the welfare of populations everywhere but also for political stability and international peace. Yet there is increasingly undeniable evidence that persistent human action is behind the environmental crisis and that disregard for the consequence of these actions is leading to its intensification. Quoting from the most recent report from the Intergovernmental Panel for Climate Change (IPCC, 2013, p. 17), “Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes... It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.”

Of course, humans have exerted influence on the physical environment since early times but, as in the case of other species, this has taken place in the course of normal interaction within local ecosystems. As it is by now widely accepted, the situation started to change from the beginning of the Industrial Revolution. The same scientific and technological advances that, in the words of North, enabled mankind to tame or conquer his physical environment were instrumental in transforming this environment in ways that would prove catastrophic. These advances had two other consequences that in turn also contributed to influence the physical environment. First, human populations escaped from the ecological cycles that governed all other species and started to grow unchecked, limited only by their human environment. And second, the rise in welfare made possible by increases in productivity led to a mounting demand for energy and other natural resources.

Despite the growing recognition of the negative impact of human action on the environment and the ever more confident scientific evaluation of the situation, the response of the international community, through its decision-making bodies, has been woefully inadequate. It is true that, starting from the Earth Summit convened in Rio de Janeiro in 1992 under the auspices of the United Nations, governments had begun to discuss environmental issues within the newly created United Nations Framework Convention for Climate Change (UNFCCC). Successive Conventions of the Parties (COP) have reached

limited agreements, most notably the Kyoto Protocol in 1997 and, more recently, the Paris Agreement in 2015. Although these are steps in the right direction, progress is slow and not sufficient to fundamentally relieve the worsening environmental outlook. This failure of global governance has a variety of explanations. In the first place, there is the ever-present resistance that national governments offer to the cession of sovereignty to international bodies. Secondly, well-established economic interests in the energy and agro-industry sectors, among others, have so far successfully resisted calls for a rethinking of their practices. This is due, in no small measure, to the intimate relations between business and political circles in most countries. Thirdly, the strikingly different perspectives on these issues held by developed and developing countries make international negotiations extremely complex and a meaningful agreement remote.

Even if we look at the environmental crisis at the national level where, in principle, governments are expected to have the capacity to formulate policies adequately, we notice failures of governance. Brazil is an interesting example of this situation. Powerful and well-connected industrial and agro-industry sectors have successfully prevented the country from dealing with the combined issues of air pollution, water pollution, deforestation (of the Amazon), progressive extinction of plant and animal species, and deterioration of soil quality among others. The atypical weather events affecting the country in recent years, with a combination of drought in some areas and flooding in others, have highlighted the delicate links between ecosystems in the Amazon region and the prosperous regions in the South and Southeast regions of the country. As a result of these weather events, as well as of inadequate preparation for this sort of contingencies, the country is facing critical shortages of water in some of its largest metropolis as well as a dangerously weakened energy system.

4.2. The Demographic Crisis

As it is well explained by Angus Maddison in his fascinating contribution to world economic history (Maddison, 2001), rapid population growth is a phenomenon of the past two centuries. Writing at the turn of the millennium, Maddison notes that the world population increased by about a sixth in the first millennium of the present era, by a factor of four in the period from 1000 to 1820, and by a factor of 5.6 in the period from 1820 to 1998. Average per capita income barely changed during the first millennium, going up by some 50% in the 1000-1820 period, and accelerating vigorously in the period from 1820 to 1998, increasing by a factor of 8.5 (Maddison, 2001, p. 27). Indeed, the demographic evolution of the human species in early times was not substantially different from that of other species. The development of agriculture, the onset of urbanization, and scientific and medical advances that made possible rises in income, decreases in mortality rates and the lengthening of the average lifespan, all contributed to a continued population expansion and to the extensive occupation of earth. Of course, as pointed out by Maddison himself and also by more recent studies from the United Nations' Population Division (United Nations, 2013), population growth has never been homogenous. Very densely populated areas, especially in Asia, coexist together with relatively sparsely populated areas, especially in the Americas and Oceania. Although unrestrained from ecological cycles, population growth is certainly not exponential and it has shown to be highly sensitive to economic conditions. The *demographic transition*, the

causal chain initiated by an improvement in hygienic standards followed by a decrease in infant mortality and sometime later by a fall in female fertility, is well documented and is progressively leading to a marked deceleration in population growth in all areas of the world, as pointed out, for instance, by Bloom et al (2001).

As it can be inferred from the preceding paragraph, the demographic crisis is not simply about uncontrolled world population growth but instead refers to a set of issues related to population, its geographical distribution, its age distribution, and its socio-economic conditions. From a developed world perspective, the dominant aspect of the demographic crisis is the aging of the population, an ongoing process that is the consequence of the lengthening of life expectancy and the steep fall in female fertility ratios. Population aging will cause serious economic, welfare, and even ethical problems and poses formidable challenges to policy makers in all developed countries. Middle-income countries are not far from entering into this demographic phase. On the other hand, for developing countries, especially in Africa and South Asia, the demographic crisis is dominated by a still booming population that seems destined, in the absence of human capital, to be doomed to poverty.

The linkage between these two facets of the demographic crisis, forcefully contributing to its global character, is given by international migration. Migration has been, throughout human history, a powerful driver of change but it has also entailed huge social dislocations, war and destruction. The conquest of the Americas by Europeans is a good example of the lasting havoc than can be brought by invading populations on well-established civilizations and peoples. In our times, once again, migrations display this ambiguity about their potential effects. In recent months the world has followed with anxiety the journeys of countless Africans struggling to make their way into the shores of Southern Europe. If we take into account the projections of African population growth during this century, and as further developed in Saavedra-Rivano (2014), what is observed now is a diminutive hint of a possible future where hundreds of thousands will desperately attempt to migrate from Africa to Europe and other areas of the world. Such a catastrophic situation can be avoided provided that the demographic crisis is grasped in its global character. This is of course another example of a man-made crisis that is, thanks to studies from the United Nations and others, rather well understood. What is still missing is a translation of this understanding into an establishment of proper global institutions with the means to tackle it.

4.3. The Financial Crisis

Of all the three crises discussed here this is perhaps the most widely known, given that it recently affected in a very visible manner the well-being of large segments of the population worldwide. It is also the least understood as most people believe that the financial crisis belongs to the past. As we shall see in what follows, this is not the case. Several excellent accounts of this crisis, such as Reinhart and Rogoff (2009) and Wolf (2014), are available and there is thus no point in entering into a detailed description. Suffice it to say that the recent economic crisis was triggered by a collapse in the housing prices in the United States in 2007. It soon spread to global investment houses and banks causing, in particular, the disappearance of Lehman Brothers in September 2008. By then the crisis had ceased to

be a purely financial event and it affected production and international trade. By 2010 the geographical center of the crisis had moved to the Eurozone, affecting most deeply Spain, Portugal, Greece and Italy. It is unquestionable that up till now the world economy has not fully recovered and that the evidence of its continuity is provided by a succession of disturbances moving from one region to another and from one economic sector to another. As a matter of fact, it can be argued that the underlying causes that led to the financial crisis in 2007 are still present. These causes are related to the huge power that the financial sector has accumulated within countries and internationally and to the absence of meaningful regulation of their activities, especially on the global economic stage, which would inhibit the irrational and unsecured expansion of their assets and liabilities. The interrelations between the financial and the political world, the sizable contribution to political parties in otherwise respectable democracies, the outsized remuneration packages of top officers of financial firms, and the revolving door connecting financial firms, government administrations, and international institutions, are some of the factors that have so far made it difficult to address the fundamental flaws in the world financial system. We have once again an enduring crisis that is well understood by the work of economists going back to Minsky (1982) but that persists due to a very serious failure of global governance.

“An adequate management of the complex of crises requires a profound revision of the political system that our irreversible global society requires, in particular the progressive transfer of sovereignty from nations to institutions.”

5. Final Comments

A common trait of the environmental crisis and the financial crisis is that they have been provoked by excesses in our desire to transform our (respectively physical and human) environment. This raises the rather provoking question of whether the “deep underlying force” mentioned by North (2005, p. 4) may become, if unchecked, eventually self-destructive for mankind. Just limiting ourselves to the quest for transformation of our physical environment based upon the development of scientific knowledge, we can mention several situations where society seems to be playing with fire: nuclear technology, both the development of weapons of mass destruction and nuclear energy; genetic research (biological warfare, GM foods, genetic engineering of new life forms); and even artificial intelligence, as highlighted through recent warnings by prominent scientists and entrepreneurs.*

An obvious answer to the current situation is the strengthening of the institutional setup of global governance. This involves an extensive review of the goals and authority of existing institutions, such as the United Nations Environmental Program and the World Bank, and possibly the creation of new international bodies to address the pressing issues facing mankind. It must be recognized that an adequate management of the complex of

* Research Priorities for Robust and Beneficial Artificial Intelligence: an Open Letter (<http://futureoflife.org/ai-open-letter>)

crises requires a profound revision of the political system that our irreversible global society requires, in particular the progressive transfer of sovereignty from nations to institutions, which will steer a global governance deserving of that name. It is of course unrealistic to imagine that such a process of political globalization will take place without the parallel development of a vigorous global society and its corresponding institutions. These would be two important elements in the construction of a *new paradigm* for the future development of our world.*

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* See also the inspiring note by Šlaus et al (2014)