

## **Towards an Understanding of Global Crises**

*A paper submitted to the XII International Colloquium  
Visions of Sustainable Development: Theory and Action  
Florida, USA, May 20-22, 2015*

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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 of 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 crisis, the demographic crisis and the financial crisis. In the case of the environment the paper also offers a brief discussion of current hydric and energy crises in Brazil

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### *1. Introduction*

The world is going through a dangerous and unprecedented period when several processes are entering into critical stages. These emerging crises are of a global nature and their coincidence in time makes them even more threatening that they would be in isolation. I will single out three of these crises as they are at a well-advanced stage and their existence is well recognized despite the fact that little action is being taken in their regard. They are: the environmental crisis; the demographic crisis; and the financial crisis. In these first notes I will not enter into a description of them but I will just observe that, although some may argue that the financial crisis has been surmounted, there are numerous signs that it is yet unfolding; at any rate, the fundamental causes of the global financial disorder have not yet been addressed.

There are other potential crises looming in the future, such as the shortage of essential resources to human civilization (such as foodstuffs and fresh water) and the increasing disparities in the social and economic conditions prevailing within and among countries. This paper does not pretend to draw a catalog of crises but instead to offer some contributions towards an understanding of the underlying causes of this complex of crises and some thoughts about how we can deal with this situation.

This paper takes the view that the several crises currently affecting the world, such as the environmental crisis, the demographic crisis, and the financial crisis, demand a unified explanation. It is not only that these crises are interconnected in more or less subtle ways but, especially, that they share common underlying causes. First of

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all, these crises are man-made, that is, the result of human and social action. We will also argue in what follows that these crises have not been mitigated and may not be averted because of the inadequate response of the global world system and, in particular, of the failure to build suitable institutions to deal with them.

The paper consists of this introduction and four other sections. Section 2 dwells briefly on the nature of crises, distinguishing between man-made and nature-induced crises. It makes the point that the global crises we are interested in are all man-made crises. Section 3 presents the seminal contributions of Ronald Heiner and Douglass North that constitute the basis for our theoretical framework. The basic idea is that uncertainty, as originally defined by Frank Knight, underlies the behavior of individuals as well as of 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 three selected crises (environmental, demographic and financial). Finally, the last section offers some final comments.

## 2. *On the Nature of Crises*

Crises can appear as the consequence of natural phenomena or they can be provoked by human action. For example, a prolonged and acute solar storm 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. Although the magnitude of the crisis would be related to the reliance of our way of life on electricity, communications and data processing, 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 assumption in what follows is that all of the above-mentioned crises are essentially a consequence of human behavior. In other words, these are man-made crises rather than nature-induced crises. This assumption implies, of course, 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 assumption is that alterations in human and social behavior might, if adopted at an early stage and in a properly coordinated way, may have an effect in 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 Douglass North (2005) analysis of the historical process of economic change (Douglass North,

“Understanding the Process of Economic Change”, Princeton Economic Press, Princeton 2005) and from Ronald Heiner (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, contrarily 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. Heiner’s contribution was largely ignored in subsequent years but was rediscovered by North. According to North “the deep underlying force driving the human endeavor ... is (their) ubiquitous efforts to render their environment intelligible – to reduce the uncertainties of that environment.”<sup>1</sup> He emphasizes as well the pervasiveness of uncertainty and the historical role that responses to uncertainty have 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.”<sup>2</sup> North also refines the concept of uncertainty as originally introduced by Knight and distinguishes 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; that whose reduction requires altering the institutional framework; uncertainty arising from novel situations that requires restructuring beliefs, and: residual uncertainty that may lead to “non-rational” beliefs (e.g. magic, religion).<sup>3</sup> It must be observed that the mention of “novel situations” makes clear that uncertainty is not static and, even as humans continuously tackle it, it does not necessarily recedes. This has to do with the “ergodic” nature of our world whereby we cannot expect the future to keep repeating past patterns.<sup>4</sup> The preceding classification of uncertainty according to five types hints at the dynamical process of change that North depicts in his opus. The human drive to reduce uncertainty in their environment leads them to proceed to changes in that 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 their surrounding environment humans will create differentiated systems of beliefs and sets of institutions and their stock of knowledge will evolve. The institutional setup provides a set of guides and constraints not only in steering 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 physical environment and human environment. In its drive to make the environment more certain human action will transform both the physical and human environment. North is much more focused

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<sup>1</sup> North (2005), p. 4

<sup>2</sup> North (2005), p. 14

<sup>3</sup> North (2005), p. 17

<sup>4</sup> North (2005), chapter 2

on the human environment, the evolving institutional makeup and system of beliefs underlying it. He argues at length<sup>5</sup> 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 observation that apparently disregards the fact that transformations in our physical environment may affect it in unintended and negative ways.

#### 4. *Elements for an Understanding of Global Crises*

##### 4.1. *Conceptual Discussion*

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 to a failure to adequately transform the institutional setup in order to comply with a new belief system. The former could be termed a *knowledge failure* and the latter an *institutional or governance failure*.

It needs to be stressed that crises do not take place in a moment of time but instead develop over time. They announce themselves subtly at first and are usually ignored at that 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 managed 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 related 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

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<sup>5</sup> North (2005), chapter 7

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 that 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 could not say that the crises are being fuelled 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 in 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 19<sup>th</sup> century is still quite constrained by national sovereignty.

In what follows we will engage in a brief discussion of three well-known crises and place them in the context of the previous discussion.

#### 4.2. *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 causes, are the melting of polar caps and of glaciers, the rise of oceans, the deterioration of water quality worldwide, and the increasingly severity of weather events. Despite all the technological advances achieved 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 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 but also for political stability and international peace. Yet there is increasingly undeniable evidence that human action has provoked 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), "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-20<sup>th</sup> century."<sup>6</sup> 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

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<sup>6</sup> IPCC (2013), p. 17

beginning of the Industrial Revolution. The same scientific and technological advances that, in the words of North, enabled mankind to tame or conquer its 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. Firstly, human populations escaped from the ecological cycles that governed all other species and started to grow unchecked, limited only by their human environment. And secondly, 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 precise scientific analysis 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 have started 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. Although these are steps in the right direction, progress is slow and not sufficient to fundamentally alleviate the worsening environmental outlook. This failure of global governance has a variety of reasons. In the first place, there is the ever-present difficulty that national governments have to cede sovereignty to international bodies. Secondly, well-established economic interests in the energy and agroindustry sectors, among others, have so far successfully resisted calls for a rethinking of their practices. Such success owes, in no small measure, to the intimate relations between business and political circles in most countries. Thirdly, the strikingly different perspectives on these issues dividing developed from developing countries add to the remoteness of any meaningful agreement.

Even if we look at the environmental crisis at the national level where, in principle, governments have the capacity to formulate policies adequately, we see failures of governance. Brazil is an interesting example of this situation. Powerful and well-connected industrial and agroindustry sectors have successfully prevented the country from dealing with the combined issues of air pollution, water pollution, deforestation (of the Amazon forests), progressive extinction of plant and animal species, and deterioration of soil quality among others. The recent atypical weather events affecting the country in recent months, 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 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.

### 4.3. *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, it went up by some 50% in the 1000-1820 period, and it accelerated vigorously in the period from 1820 to 1998 increasing by a factor of 8.5.<sup>7</sup> Indeed the demographic evolution of the human species in early times was not that 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 occupation of the earth territory. Of course, as pointed out by Maddison himself and also by more recent studies from the United Nations' Population Division<sup>8</sup>, 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.<sup>9</sup>

As it can be inferred from the preceding, the demographic crisis is not simply about world population growth but instead refer 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.<sup>10</sup> Middle-income countries are not far from entering into this demographic phase. In the other hand, for developing countries, especially in Africa and South Asia, the demographic crisis is provoked 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 that contributes forcefully to its global character is given by international migrations. Migrations have been, throughout human history,

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<sup>7</sup> Maddison (2001), p. 27

<sup>8</sup> United Nations (2013)

<sup>9</sup> See, for instance, Bloom et al (2001)

<sup>10</sup> See for a more detailed discussion, Saavedra-Rivano (2014a)

powerful drivers of change but have also been behind 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 to 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<sup>11</sup> what is observed now is a diminutive hint of a possible future where hundreds of thousands will desperately try to migrate from Africa to Europe and other areas of the world. Such a catastrophic situation can still 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 the establishment of proper global institutions with the means to tackle it.

#### *4.4. The Financial Crisis*

Of all three crisis discussed this is perhaps the most widely known, given that it 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 think 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 exist (see, for instance, Reinhart and Rogoff, 2009, and Martin Wolf, 2014) and there is thus no point in a detailed description. Suffice it to say that the crisis was triggered by the collapse of 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 to now the world economy has not fully recovered and that there is continuity in 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 there. These causes arise from the huge power that the financial sector has developed within countries and internationally and the absence of meaningful regulation of their actions, especially in the global economic stage, that will 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, these are some of the factors that have so far made difficult addressing the fundamental

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<sup>11</sup> See Saavedra-Rivano (2014b)

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 Hyman Minsky (1982) but that continues due to a very serious failure of global governance.

### *5. Final Thoughts*

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 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 when 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 by recent warnings by prominent scientists and entrepreneurs<sup>12</sup>.

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 will be need to be recognized that adequate management of the complex of crises requires a profound revision of the political system that our irreversibly global society requires, in particular the progressive transfer of sovereignty from nations to the institutions that will steer a global governance that deserves that name. Of course, it is unrealistic to imagine such a process of political globalization to take place without the parallel development of a vigorous global society and of their corresponding institutions. These would be two important elements in the construction of a *new paradigm* for the future development of our world.<sup>13</sup>

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<sup>12</sup> Research Priorities for Robust and Beneficial Artificial Intelligence: an Open Letter (<http://futureoflife.org/>)

<sup>13</sup> See also the inspiring note by Šlaus et al (2014)

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