

# Transitions: Speculative Futures for *Homo sapiens*

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## Abstract

The concept of sustainable use of the planet receives some attention, but very little interest has been shown in any system-level discussion about the transition from unsustainable to sustainable practices. The transition period will be painful at best; however, if nothing substantive is done, human deaths and suffering could occur on a major scale. If humankind wishes to leave a habitable planet for posterity and minimize human suffering, extended discussions of the transition period must begin now.

**Keywords:** Sustainability, Future transitions, Carrying capacity, Population growth, Sustainable coevolution.

*“If a nation expects to be ignorant and free, it expects what never was and never will be ... The People cannot be safe without information. When the press is free, and every man is able to read, all is safe.”*

-Thomas Jefferson

## 1. Introduction

Earth has existed for about 4.5 billion years and has experienced numerous transitional changes. *Homo sapiens* has been on the planet about 160,000 years—a small portion of the total time. For most of the time, the human species was spread thinly over the planet with minimal environmental impact. However, the Agriculture Revolution, and later the Industrial Revolution, changed an almost flat curve of population growth to an exponential growth (from 0.5 billion people to 6 billion in 2000), and the growth continues. However, no exponential growth curve continues forever. Humans are, literally, a species out of control, but the situation is only temporary. Nature has “solved” this type of problem with other species many times in the past. Humans can preempt nature’s harsh solutions by seizing the opportunity to solve problems by living sustainably. Numerous ethical issues are involved, and a few of the issues that deserve attention are mentioned here.

Limits dictate the numbers of humans Earth can support, including how much they can consume. In the last part of the twentieth century, more than 45% of the world’s population had to live on daily incomes of US\$2 or less. This statistic indicates that humans have overshot Earth’s carrying capacity for them, and the gap between the very rich and the very poor is still widening. Persuasive evidence shows that the ecological footprint of humankind has already exceeded the carrying capacity of the planet (Wackernagel *et al.*, 2002). Diamond (2005) discusses some of the crucial issues that the news media, with notable exceptions, have refused to examine.

Stanton (2003) discusses natural limits and controls in blunt terms. For example, he defines the violent cutback level (VCL) as being attained when the population of a nation-state or region has more people die and/or emigrate than are born and/or immigrate. Societal ambience becomes one of violence and hatred. The struggle for resources and power between rival factions (e.g., ethnic, religious, political, or tribal) worsens and reversing the situation appears hopeless. This situation is the inevitable result of weak restraints on growth (WROG), which is exacerbated by death control without an offsetting improvement in birth control. The VCL is most likely the worst case scenario. The best case scenario is that human populations are stabilized globally, unsustainable practices are replaced with sustainable practices, and humankind’s ecological footprint does not exceed the long-term carrying capacity of the planet.

Both the worst case and best case scenarios result in a dynamic equilibrium between human population numbers and Earth's carrying capacity for humans, but the difference in the scenarios of human suffering is vast. Sustainable use of the planet is based on the assumption that humankind can use the planet indefinitely, which would make the human species quite unique. However, at least sustainable use should prolong humankind's use of the planet. Some issues that will have a marked effect on the type and duration of the transitions follow. All have the potential for interactions.

## **2. Future of the Powerful Nation-states**

The Agricultural and Industrial Revolutions provided food and other resources in sufficient quantities to permit a professional military, cultural activities, and, of course, a permanent bureaucracy. These activities take abundant resources, and, with an ecological overshoot, resources become increasingly scarce. The United States and other nations can temporarily circumvent difficulties by assuming debt, but this solution is unsustainable in the long term. Even nation-states must live sustainably. In addition, war reduces the carrying capacity of the planet both in the short and long term (Cairns, 2003). Yet, irresponsible leaders may be desperate enough to keep the populace under control by temporarily providing additional resources, but at great financial expense. If nation-states maintain adequate power and authority, they will have an important role in the allocation of resources.

## **3. Fair and Equitable Allocation of Resources**

Nature does not allocate resources in a uniform way but, rather, usually begins with large numbers of individuals with varying degrees of fitness from which a few highly fit individuals are selected. The outcome is definitely not egalitarian or humanistic, but this result is likely to occur if other transitional plans fail. Compassion is a luxury restricted to societies enjoying both adequate resources and no serious competition for them. At present, a huge disparity exists, globally, in resources per capita. A relatively small group of people has huge per capita incomes, which translates into food and material goods.

## **4. Sustainable Co-evolution**

As I see it, a primary obstacle to achieving sustainable use of the planet is continuing strife (e.g., ethnic, religious, political, and so on). If humankind realized that its biospheric life support system is increasingly threatened and that severe damage to it would disrupt human society to such an extent that all of the conflict within the human species is trivial by comparison, a major effort to protect the biospheric life support system might seem much more reasonable. Global events, such as global warming and acidification of oceanic water, require a concerted effort by humankind. No one can reasonably assert: "your part of the planet is in trouble." If the biospheric life support system is severely damaged, none of the other issues causing conflict at present will matter. The danger signs of loss of biospheric life support system integrity are obvious, but leaders and the general public have not taken them seriously (Cairns, in press). Many transitions will be needed on the path to sustainability—population stabilization, not exceeding Earth's carrying capacity, replacing unsustainable practices with sustainable ones. All can be achieved with present technology, although many people will be reluctant to abandon the status quo, which would lead to further depletion of natural capital and the ecosystem services it provides. The population continues to rise despite fewer resources. The VCL is inevitable under these circumstances.

The continued urbanization of much of the world is a matter of particular interest. Approximately half the world lives in large cities, which reduces urban sprawl. However, transporting food, energy, and building materials into the city requires a major transportation system. Disposing of wastes generated by the city is also a difficult task. Large, complex systems such as cities are always vulnerable to unusual events, such as terrorism, that disrupt the technological system upon which so many people depend. Even comparatively minor events, such as transit workers strikes and refusal of municipal workers to collect refuse, can cause major disruptions in the lives of city dwellers. These events are important since the growth of cities is about twice that of the countryside in which they are embedded, and urban residents will outnumber rural residents in 2007 (Brown, 2003).

## 5. Hope for the Future

The way humankind responds to the inevitable transitions will be strongly influenced by expectations of lifestyle once the transition period is over.

(a) Neither exponential growth of the human population nor the economy can continue indefinitely on a finite planet with finite resources. As resources become scarce, they become more costly. Even in wealthy countries, such as the United States, strong incentives will attempt to reduce costs by relaxing rules on pollution controls, thereby placing further stress on already stressed natural systems. The inevitable economic decline will cause despair (e.g., 54 nations have experienced decline in per capita growth domestic product for more than a decade between 1990 and 2001 (Meadows *et al.*, 2004). Social unrest seems almost certain to increase under these circumstances, especially in those nations that are taking on significant debt to maintain the status quo. Denial is not an appropriate response to this transition.

(b) The portion of the world's population that subsists at poverty level or below will almost certainly require some improvement in their living conditions if they are to have hope for the future.

However, without population stabilization, outside help will have only temporary benefits. Also, before citizens of comparatively wealthy countries relinquish a significant portion of their resources, they will need persuasive evidence that the recipient nation is on a clear path toward sustainability.

## 6. Triage

Triage is an approach developed in field hospitals that had inadequate staff and too few resources to give everyone as much attention as would be possible under ideal circumstances.

The casualties were divided into three groups—injured with a good chance of surviving regardless of treatment, injured unlikely to survive regardless of treatment, and injured for whom treatment is likely to make a major difference in survival.

This approach probably offends humanitarians whose compassion is focused on individuals, but the idea is likely to be acceptable to people with compassion for posterity and leaving a habitable planet for future generations.

## 7. Overpopulation and Over Consumption

Overpopulation and over consumption are the two major obstacles to sustainable use of the planet. Denial that a major problem exists in both categories will not alter the planet's progress toward VCL. Since the socioeconomic system has already overshot many important limits, postponing fundamental change will only exacerbate the problems.

## 8. The Devil is the Details

Grand, global plans can be made for the transition to sustainable use of the planet. However, these plans will inevitably be judged in the context of a national, state, or regional ethical issue. Some selected illustrative examples follow. Numerous examples of similar ethical issues from specific regions or with particular interests could also be added.

(a) Clines (2005) describes the lengthening lines at American “soup kitchens” where people are suffering a malady described by government specialists as “food insecurity.” The food in the soup kitchens is free to the individuals, but government subsidies are being reduced as the lines lengthen. Thus, the burden on the private sector (e.g., churches) increases. At least some citizens will object to sending food elsewhere (e.g., third world countries) when a need still exists in the United States. On the other hand, a disturbing number of American citizens are seriously overweight. Moreover, the US per capita consumption of foodstuffs is well above the global average. The basic issue is whether a sizable underclass can be tolerated in a sustainability framework at any societal level.

(b) The United Kingdom's National Health Service is proposing to refuse medical treatment to patients who refuse to change their unhealthy lifestyles (Laurance, 2005). What if this reasoning were used for a nation or region living unsustainably (unhealthy for posterity)?

(c) El-Magd (2005) reports that one witness recalled a man on a motorcycle detonating a bomb in the midst of a group of foreigners in Egypt. Police are still investigating in an atmosphere of fear of a new wave of terrorism. However, even if the situation is resolved, fear alone will affect tourism. If tourism is essential to sustainability, how should such situations be regarded globally?

(d) Population stabilization is a key element in sustainable use of the planet (Paulson, 2005). In the United States, some pharmacists from both rural and urban areas are refusing to fill prescriptions for oral contraceptives and the morning after pill. This situation pits a patient's rights against a pharmacist's stance as a health care professional, as well as personal morals against professional responsibility.

## 9. Conclusion

Sustainability ethics require that humankind leave a habitable planet for posterity. Even if this goal becomes well established, it will have to be implemented by decisions within the framework of local, regional, and national components, each of which has numerous, unique attributes.

However, global system-level goals and objectives must be compatible. The transition from unsustainable to sustainable practices will be extremely difficult. However, failure to live sustainably is virtually certain to produce a VCL or a situation where population increase is ended by non-violent starvation and its associated diseases. Surely, carefully considered transitions to sustainability are worth more time and effort than they have been given.

## Acknowledgment

Darla Donald provided editorial assistance in preparing this manuscript for publication.

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