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Conditions for Crew Membership[1] on Spaceship Earth[2]

[1]"Crew membership" applies to the officers and captain – Spaceship Earth has no passengers.

[2]This posting is a simultaneous submission for "Climate Change and You: Putting a Face on Global Warming," EcoRes Forum Online E-Conference #3, October 19-29, 2009. Further information available at www.eco-res.org.

Freedom is the recognition of necessity. Friedrich Engels

We travel together, passengers on a little spaceship, dependent on its vulnerable reserves of air and soil; all committed for our safety to its security and peace; preserved from annihilation only by the care, the work and I will say, the love we give our fragile craft. Adlai Stevenson

Garrett Hardin's (1968) *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle* introduced the metaphor of Earth as a spaceship. (The ship that carried Charles Darwin to the Galapagos Islands was the HMS Beagle.) Although the metaphor did not receive the attention it deserved, perhaps because humankind retained the cornucopian mindset, the current global crises in 2009 make the spaceship metaphor even more appropriate than when it was first published. Humankind must be continually reminded that it is on a finite planet – Spaceship Earth. The conditions humans must accept or perish are all based on natural law, which has existed for at least 4 billion years. In contrast, human law, the late arrival, has existed for 200,000 years at the most. Some illustrative conditions follow.

(1) Spaceship Earth's carrying capacity must never be exceeded – doing so endangers the entire crew. The crew member who is responsible for allowing the additional person has endangered the present and the future and can only make amends by ceasing at once to occupy a space on the ship. Harsh – but reality is harsh.

(2) Ecological overshoot/ecological deficits provide evidence that humankind is using resources 40% more rapidly than Spaceship Earth can regenerate them. Even a large, traditional spaceship of television/movie fame would have crew members who know each other and would have a shared empathy. On Spaceship Earth, crew members have little in common with most other crew members and, thus, only a tiny sense of community. Crew members are unaware that globalization has increased the probability that all humans are likely to share a common fate. Also, politicians are unlikely to view all problems through the lens of sovereign nations. The "negotiations" on global climate change have shown this all too clearly.

The spaceship metaphor is cruel because it prohibits all the usual delusional and denial tactics used to avoid unpleasant decisions on Earth. "I don't want to hear about that" is a common avoidance tactic that would not be permissible on a spaceship. "Let me know when you have good news" is another tactic; however, crew members must be informed about all situations pertinent to the integrity of the spaceship. Ideologies of any kind (e.g., race, politics, economy) are counterproductive in the operation of a spacecraft. However, Earth is self maintaining, and every condition for sustainable use is being violated. Only scale is a key factor in determining which conditions are acceptable and which are not.

(3) Resource Allocation

On a spaceship, resources are finite and can be viewed by the crew. On Spaceship Earth, resources are also finite, but so widely distributed as to be beyond the view of a single individual. In addition, many of Earth's resources can be regenerated by the biosphere. Regeneration of resources might be possible on a spaceship constructed by humans if it had a biologically based life support system.

Even with its importance, the metaphor of Spaceship Earth is flawed. Mother Nature (i.e., natural law) favors quantity from which she selects quality – a process called natural selection. A large number of

individuals are not suited (i.e., fit) for the habitat of a particular time and perish, although they may have been competitive at some time in the future. Evolution is "wasteful" because quality is selected from quantity. However, the process is "efficient" in selecting the fittest (i.e., most competitive) individuals for a particular habitat that existed at a particular time. The pivotal question is: should humans depend on Mother Nature to keep the human population within Earth's carrying capacity with her usual methods of starvation, disease, and death? With approximately half the planet's human populations starving, malnourished, and living in poor conditions, a tipping point is in the near future or has already been passed. Mother Nature's way is very hard on individuals now living but more humane toward future generations.

Conclusions

The carrying capacity of a constructed spaceship can be estimated accurately and has been done successfully for limited space travel not far from Earth. However, all crew members of the constructed spaceship are volunteers who have met particular predetermined conditions deemed necessary for space travel. The crew of Spaceship Earth was born on the planet and has the broad range of fitness that one would expect in a population of nearly 7 billion. Controlling human population size is a subject most people avoid discussing. However, if no discussion takes place and exponential human population growth continues, Mother Nature will reduce population size until it is within Earth's carrying capacity. Her methods will not be applauded by most humans. Nevertheless, humans will probably start talking and appointing investigative committees when the catastrophes worsen. Effective action is highly improbable. Doing nothing is always costly with global problems.

LITERATURE CITED

Hardin, G. 1968. *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle*. Viking Press, New York.