

Donella "Dana" Meadows: the Consummate Global Citizen

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Donella "Dana" Meadows, lead author of the seminal work "The Limits to Growth" was arguably the world's greatest futurist and most responsible citizen. Next to Rachel Carson's "Silent Spring", "The Limits to Growth" was the most influential and clarion call to modern environmentalism, as well as being a landmark achievement in systems modeling and computational future studies. In world policy circles she was the uncontested champion of sustainable development, to her friends she was simply "Dana".

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Recently we all lost a friend. Arguably the world's greatest futurist and most responsible citizen, Donella "Dana" Meadows, lead author of the seminal work "The Limits to Growth" and the world's greatest champion of systems thinking and sustainable development passed on at the untimely age of only 59. Next to Rachel Carson's "Silent Spring", "The Limits to Growth" was the most influential and clarion call to modern environmentalism, as well as being a landmark achievement in systems modeling and computational future studies. The result of MIT's prestigious Systems Dynamics Group, the publication of "The Limits to Growth" in 1972 sent shock waves around the world and became a media phenomenon, selling 9 million copies in 29 languages. Headlines read, "Computers look into the future and shudder", "Study sees disaster by the year 2100", "Scientists warn of global catastrophe". The book unleashed a global debate that is still in force. Its popularity helped spur and proliferate the field of systems modeling and its sundry concepts, such as resource "sinks" and "sources", positive and negative "feedback loops", "carrying capacity", and "systems behavior". Today these concepts are central to environmental science and are cornerstones of the Kyoto accords on carbon dioxide reduction.

Countering the Contrarians

Since its publication, however, an army of pro-growth factions have tried to debunk the book's credibility. John Naisbitt, author of "Megatrends 2000", wrote in his introduction, that *The Limits to Growth* was proven wrong "before the ink was dry". Others commonly equated the work with Malthus and thus attempted to reduce it to nothing more than antiquated philosophy that was unappreciative of technology and free market forces. Such rhetoric was not unusual for capitalists who didn't understand or didn't want to understand the concepts of systems behavior nor the underlying realities of the global environment. Nor did such contrarians, it appears, ever care to read the works by Meadow et al, which specifically addressed the contested points. In most cases, the attackers focused on specific and insignificant instances where the price of a commodity had decreased instead of increased. Of course, never entered by the contrarians in their calculations were the substantial government subsidies that made resource extraction affordable in the first place, nor the environmental and social costs that bore the true balance. Yet, such anomalies were cited in an attempt to derail the whole science of long range global systems

modeling. As if to say, a cool day in Kansas is a blow against the theory of global warming and the preponderance of evidence which supports it.

Other captains of the contrarian movement included Julian Simon, author of "The Ultimate Resource", and Herman Kahn, author of "The Year 2000" and "The Next 200 Years". A recent recruit to this now defunct army is futurist Jerome Glenn. During a 1999 Millennial episode of the McLaughlin Group, Glenn predicted that the Club of Rome (sponsor of The Limits to Growth study) would be proved to be the "Club of Wrong". McLaughlin, true to his form, replied that he could do better than that, and predicted that all environmentalism would finally end. Unfortunately, however, for Glenn and McLaughlin, the future thus far has not been cooperative. Instead it brought us the "dot com" bubble burst and even more incontrovertible evidence of global environmental distress. The 20th century closed as the warmest century of the millennium, with the 1990s the warmest decade of the century, and 1998, the warmest year of record. In addition to the unprecedented fires that circled our planet at this millennial transition, we also saw massive thinning of Arctic ice and shrinkage of glaciers. If such ice were only an adornment to our planet, like rocks in a martini, it probably wouldn't matter, but, as it turns out, the Arctic ice, in addition to keeping current sea levels in check, is also the foundation of an ecosystem which drives the oceanic food chain. Melting Arctic ice not only floods all coastal areas, but eliminates the food supply for marine life as well. (Call this an unanticipated revelation; coastal flooding, even severe coastal flooding, will be minor problems in comparison). The year 2000 also saw the publication of Scientific American's cover story, "Global Warming: The Hidden Health Risk" which documented the world wide expansion of vector born diseases, such as malaria, dengue fever, hantavirus, and cholera. The article forecasts that by the year 2100, due to increased warming, the zone of potential malaria transmission will expand to an area inclusive of 60 percent of humanity. (Epstein 2000).

Thus, as time marches forward, the contrarian arguments fall by the wayside. We now know that the earth is warming at an accelerating rate and is doing so in no small part from anthropomorphic influences. This is no longer just a small team of MIT programmers making such prognostications, but the collective conclusion of thousands of the worlds' leading scientists. The Intergovernmental Panel on Climate Change (IPPC), though attempting to use cautious language, is becoming increasingly ardent. They state that "most of the warming is attributable to hu-

man activities”, and that in the next century global temperature will increase by at least 1.4 and as much as 5.8 degrees Centigrade, a forecast far worse than previously estimated. Their scenarios for the plausible near term affects of this warming are startling. Given contemporary information, *The Limits to Growth* was not only accurate, it was conservative. The real situation is getting worse, faster.

Poetic Justice - Vindication of the Limits to Growth

Perhaps there is a fitting irony in that in the week of Donella’s unfortunate passing, the IPCC published the summary findings of their third assessment report (TAR) which, in its totality, fully vindicates *The Limits to Growth* and confirms many of its findings and arguments almost to the letter. They state:

Projected climate changes during the 21st century have the potential to lead to future large-scale and possibly irreversible changes in Earth systems resulting in impacts at continental and global scales...Examples include significant slowing of the ocean circulation that transports warm water to the North Atlantic, large reductions in the Greenland and West Antarctic Ice Sheets, accelerated global warming due to carbon cycle feedback in the terrestrial biosphere, and releases of terrestrial carbon from permafrost regions and methane from hydrates in the coastal sediments. (IPCC 2001:4)

Other IPCC projected impacts, which could be lifted right out of *The Limits to Growth*, include: “reduction in potential crop yields”, “decreased water availability”, “increase in the number of people exposed to vector-borne diseases”, “widespread increase in the risk of flooding”, and “increased energy demand for space cooling.”

Along the economic front, the IPCC report states: “The costs of ordinary and extreme weather events have increased rapidly in recent decades. Global economic losses from catastrophic events increased 10.3 fold... (between the 1950s and 1990s in 1999 US\$)” (IPCC 2001:12). Stating further, such continued trends would

...trigger increased insurance costs, slow the expansion of financial services into developing countries, reduce the availability of insurance for spreading risk, and increase the demand for government-funding compensation following natural disasters. (IPCC 2001:12)

Almost 30 years ago, Meadows et al came under fire for stating exactly such environmental and economic scenarios. The costs of environmental loss would inevitably cut into capital flows and investments. Its all there in the systems models which the contrarians refused to look at. Their continued reticence, even today, is like the Spanish Inquisition's refusal to look through Galileo's telescope. At stake is a paradigm. Science be damned.

Perhaps, however, the most fitting tribute to the legacy of Donella Meadows in the IPCC report, is in their description for how to lessen the potential impacts of climate change.

Policies that lessen pressures on resources, improve management of environmental risks, and increase the welfare of the poorest members of society can simultaneously advance sustainable development and equity, enhance adaptive capacity, and reduce vulnerability to climate and other stresses. (IPCC 2001:6)

Exactly the measures which Meadows has been preaching for over quarter of a century, and exactly what pro-growth, World Bank friendly forces do not want to hear.

Consummate "Global Citizen"

For the majority of the years since *The Limit to Growth*, Donella focused her energies on promoting a positive vision of the future, through such avenues as sustainable development and her syndicated weekly column "The Global Citizen". The philosophy and practice of sustainable development, which has now taken hold worldwide, is largely due to her. Its tenets are first outlined in *The Limits to Growth*, but under slightly different terminology. Defining appropriate "feedback mechanisms" for a sustainable state, she expounds on several ideas, such that,

...the total costs of pollution and resource depletion be included in the price of a product, or that every user of river water be required to place his intake pipe downstream from his effluent pipe. (Meadows 1972:186)

Those ideas are now at the heart of "ecological economics" and central to modern pillars of the sustainability movement, such as Ray Anderson's "Mid Course Correction" and Bill McDonough's "Eco-effective" design principles. Countering the argument that such a state of limited growth is akin to death, as her detractors often huffed, Donella states,

Population and capital are the only quantities that need be constant... Any human activity that does not require a large flow of irreplaceable resources or produce severe environmental degradation might continue to grow indefinitely. In particular, those pursuits that many people would list as the most desirable and satisfying... (Meadows 1972:180)

Continuing

...global equilibrium need not mean an end to progress or human development. The possibilities within an equilibrium state are almost endless...It is possible that new freedoms might also arise - universal and unlimited education, leisure for creativity and inventiveness, and, most important of all, the freedom from hunger and poverty enjoyed by such a small fraction of the world's people today. (Meadows 1972:184)

Dana's most recent creation, The Sustainability Institute in Hartland Four Corners, Vermont, is a premier "think-do tank" for sustainable development - a nexus for innovation in resource use, economics, and community. Dana is regularly cited by today's great industrial and environmental luminaries as being instrumental to their thinking, including, for example, Amory Lovins, John Todd, Ray Anderson, and so forth.

In my eyes, she and Rachel Carson are sisters. They are the heroines of the new millennium, which, if we survive, will have their works and voices recorded for posterity long after we've forgotten their naysayers. Their philosophy, science, and sensibility are the cornerstones of a sustainable humanity.

To my friend Jim Laurie, one of the few "futurists" who actually understands and uses systems modeling, Dana was a modern day Thoreau. She intentionally chose life on a small New England farm where nature cradles knowledge and wisdom like precious children. When Thoreau didn't have an answer to one of society's many problems he would go into the woods for insight. He trusted nature's tutelage and did not conceal his own ignorance. As Thoreau writes,

The highest that we can obtain is not Knowledge, but sympathy with Intelligence...there are more things in heaven and earth than are dreamed of in our philosophy. (Thoreau [1862] 1992:50)

Personal Friendship

Dana became my friend 18 years ago. She taught me to spin wool

from sheep she had raised on her farm in Plainsfield New Hampshire. I used to visit her often. We joked about creating a game called "Non Trivial Pursuits".

As a student at Tufts University, I invited her to debate Anthony Wiener who co-wrote *The Year 2000* with Herman Kahn and was a member of the Hudson Institute, intellectual apologists for the World Bank. Dana arrived haggard because she had been up all the previous night helping one of her ewes to deliver. I think there were 4 or 5 baby lambs in all. She mentioned this fact during the debate and Anthony made a snide remark about it. Later I heard him say that he tried to start a fight with her but she wouldn't bite. He seemed proud of himself and wore what today we may call the "Dubya Smirk" - like when the former governor gloated about his Texas death penalty record. In thinking about Mr. Wiener's comments, and Dubya's, I am reminded of the great Shakespearean passage from King Henry the Fifth, "His jest will savor but of shallow wit, when thousands weep, more than did laugh at it".

Just two summers ago I wrote her a letter from Crows Pass Cabin outside of Girdwood, Alaska. It was late August and a blizzard was already in progress. I went there with the specific intention to write letters to those I love.

Her passing hit me like a blow to the chest. She is one of the principal reasons I call myself a futurist. I have been thinking of her quite a bit lately, and was looking forward to visiting with her soon. I wanted once again to sit by her side, on her porch, and spin wool.

Goodbye, Dana. There is no limit to your influence, or our love of it.

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For more information see:

New York Times Appreciation. <http://www.nytimes.com/2001/02/22/national/22MEAD.html>

Boston Globe Appreciation. http://www.boston.com/dailyglobe2/053/obituaries/Donella_Meadows_59%2B.shtml

Sustainability Institute. <http://www.sustainer.org/>