

Environmental Surprises: Planning for the Unexpected

by Chris Bright

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One of my favorite quotes that I've read all semester:

"We are comforted by the thought that even if we have not turned the trends around there will be time for our children to rise to the challenge. But this way of thinking is like sleepwalking. To understand why, you have to look at decline close up."

Honduran example:

- increases in industrialized ag led to deforestation (late 80's and early 90's)
 - which lead to mass migrations of people
 - which gave new fodder for malaria-infested mosquito populations which became resistant to pesticides
- in 1998, Hurricane Mitch hit causing massive landslides and loss of 95% of its agricultural production.

Mitch was the fourth-strongest hurricane to enter the Caribbean in the twentieth century, but much of the damage was caused by deforestation: If forests had been gripping the soil on those hills, fewer villages would have been buried in mudslides. And in the chaos and filth of Mitch's wake there followed tens of thousands of additional cases of malaria, cholera, and dengue fever.

Complexities of Change

1) Spiking Trends

- presently, too many trends are spiking
 - rapid global warming in the south
 - deforestation

- malaria
- mudslides
- there's rapid change on many levels, ecologically
 - very rapid shifts are harder to anticipate and manage

= **Discontinuities**

2) Overlapping pressures

- mudslides were related to deforestation; mosquitoes related to increased pesticide use, etc...

= **“synergisms”**

3) Discontinuities and Synergisms

- Both lead to uncertainty about the future and how to plan for it
- “When we isolate a phenomenon in order to study it, we may actually be preventing ourselves from knowing the most important things about it” (43).

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forestation, climate change, chemical contamination, and many other forms of environmental corrosion are at work on a global scale. Each has engendered its own minor research industry. But even as the publications pile up, we may actually be missing the biggest problem of all: What might the inevitable convergence of these forces do?

- Key examples of this are in **surface Forest Fires** extended information on (p 43-44)
 - trees haven't adapted to fires in the tropics, so a “contained burn” may result in much more damage; up to 1.5 times the burned area can be affected.
- Also called “second-order” effects

Other Tropical Surprises

- Widespread deforestation may lead to substantial dryness, contributing to the positive feedback loop of forest fires
- Global industrialization could lead to:
 - acid rain & greater acidification of soil
 - increased arms and weaponry in tropical forests (from loggers who hunt and from civil conflicts)
 - spread of diseases; inception of AIDS is linked to bushmeat trade in Central Africa

Agenda for the Unexpected: New Paradigms/Ethics

- Natural systems are becoming less predictable because of humans
- We need to forge a new ethic to manage and live with nature
 - emphasis on minimal interference with wildlife
 - minimal interference with natural processes

3 basic Principles:

- 1) *We must “err on the side of minimal disruption whenever possible” (45)*
 - “Nature is a system of unfathomable complexity.”
 - Just because we have understood processes in the past, this will be less true in the future
- 2) *Know the full cost (potentially externalized and internalized) of each natural resource before deciding if it is worth it*
 - Decide if there is a better way to “pay”
 - “Nature gives away nothing for free.”
- 3) *Restoring complex systems is impossible*
 - once it’s destroyed, we can’t go back (like reefs)
 - there is no “reset” button
 - again, err on the side of minimal destruction

A New Policy Ethic based on these three themes:

- 1) Monoculture technologies are brittle, so plan for diversity
 - the hidden costs of monoculture and industrialization always catch up and are hard to pay back to nature

- 2) Direct Opposition to a natural force is generally counterproductive, so plan to work with nature
- for example, pesticide use seems smart, but only in the short run or until pests develop immunity
 - restoration of wetlands can be more effective for flood control than dams
- 3) You can never just have one effect, so plan to have several
- There are many likely ripple effects to environmental policy, even positive ones
 - organic farming in the heartland could help the Gulf's dead zone
 - "green jobs" promotion could help the economy, unemployment, and the environment
- 4) Solutions are almost never permanent, so plan to keep on planning
- nature is in a constant state of flux
 - there are no permanent solutions
 - we can take advantage of existing technologies like communications to support innovative policy thinking
- 5) None of us may find the answer alone, but together we probably can
- "One of the most important policy activities may therefore be to encourage innovation outside policy institutions" (47)

Last line:

***"In the face of the unexpected, our best hopes may lie in our collective imagination."* (47)**