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Author

Gable, Cate

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Aftermath: Systems Thinking, Sustainability and Terrorism

Cate Gable

Axioun Communications International, USA

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-the part of this world that we can inspect and analyze is always finite. We always have to say the rest of the world does not influence this part, and it is never true. The world is totally connected.

Jacob Bronowski (1978, p. 96)

None of us will escape the after-effects of the terrorist acts of September 11th-those events have changed the world. Now-

- Passenger planes can become bombs.
- Steel buildings a hundred stories high can fall.
- An entire industry-Airlines-can come close to collapse, laying off over a 100,000 workers, teetering on the edge of bankruptcy, in just three days.
- And thousands of families can lose loved ones without warning in a time of peace.

And these are only the most obvious effects. We don't yet know all the long-term effects on our psyches, our dreams, our visions of ourselves as individuals and as a people. But is the structure of our well-being-emotional and economic-so fragile that it can be devastated by suicidal men with box knives? Are freedom, individualism, and the free-market spirit that Americans hold so dear simply flimsy images on a house of cards, or are they sustainable cultural values? Are the notions of sustainability and our strongly held desire to preserve the environment still useful to us in this new world?

To answer these questions, we take a short tour of systems thinking and the roots of sustainability that offer one framework for understanding our increasingly complex post-September 11th world. The United States is a society of individuals from all races and cultures. We believe in protecting the rights of individuals acting in their own self-interests and we create institutions and free markets where people pay the price for, and can earn the benefits of, those actions. Our democratic society protects people's rights and imposes on them personal responsibility (and punishments) when they do wrong. We have come to this vision of culture after a long struggle for independence and a bloody internal strife during the Civil War when the North and the South fought for the right to create the dominant set of values of the United States of America. We are in a similar struggle now, on a

global scale, as we move from a grouping of nations to a world community, the "Global Village" that Marshall McLuhan predicted.

America, Afghanistan, Australia-all nations are more than mere collections of people; they represent cultures and dynamics that have qualities that go far beyond those of the individuals that reside there. Just as a whole is more than the sum of its parts, societies are more than the sum of their individual citizens. These *whole cultures* arise from the organizing relationships of the parts. (In fact, though, quantum physics shows us that there really are no parts at all. What we call "a part" is merely a pattern in an inseparable web of relationships.) When people or ideas or organisms or events are drawn together in unique combinations, something new is born with new qualities not present before; scientists call this synergy. The totality of this new bundle of combinations, this *synergy*, is a system.

Systems nest within other systems. Even an individual cell is a system with a nucleus, fluid, proteins, DNA, RNA, a membrane. Complete organisms themselves (with cells, bacteria, and other systems within them) are systems. Many organisms together form larger systems-like the Olympic Rainforest, or the river and environmental ecosystems that support Pacific West Coast salmon. Some people even feel that memes-or symbols and ideas-can combine to form "living systems." Systems overlap and influence one another. And systems are self-stabilizing; they all possess a quality called *autopoiesis*- literally, the capacity of self-making. The capacity of autopoiesis brings a system that has been jolted by some new force back into equilibrium. Just like individual humans, systems want to continue to exist.

Systems thinking¹ is the science of understanding how systems work. To understand systems, we must have the ability to shift our focus from macro to micro levels within a system, and back and forth between systems in order to explore-

- How and why systems form
- Why they collapse
- What qualities support which characteristics in a system
- The function of feedback in a system · What happens if one part of a system is depressed or another enhanced

Why is this discipline needed now? Because we live in a world that grows increasingly complex at a more and more rapid pace. The mechanistic understanding of the world and the body, based on machines and the assembly line of the industrial age, that seemed to work for much of the last century is inadequate now. Science used to work by breaking the whole

down into parts to examine them. Now we know that leaves out most of the story. Systems thinkers focus on processes, dynamics, relationships, and synergies. The systems view is patterned on an understanding of complex living/biological systems and their properties. It behooves us to study the living systems around us because most of them have been in existence for thousands, even millions!, of years. *Homo sapiens* are not only the new kid on the block, we are not even sure where the block is, what it is made of, or who shares it with us. Take a *systems* look at terrorism and see how that approach might inform our thinking.

The dictionary tells us that *terrorism* is violence committed or threatened by a group to intimidate or coerce a population, society, or government. A terrorist was the original name for the activists during the Reign of Terror in France in 1789, when anyone obnoxious to the revolutionaries in power could be summarily killed without just cause. Without just cause. But not without cause. Every force within a system has causes. When something like the September 11th attack happens, it is impossible not to ask "what caused this," or "why is this happening now?" It is impossible not to wonder if there were any actions that we could have taken, in the United States or anywhere, that could have prevented the hatred and fear that seems to have motivated the terrorism. We do this not because society can be blamed for the evil actions of others, but because society has an interest in assuring that people's worst aspects are diminished and their best are enhanced. A system has outcomes (or outputs). Systems are shaped and reshaped based on conditions or qualities that are either enabled or disabled by the system as a whole, in turn enabling or disabling certain outcomes.

The terrorists are horribly wrong to take life, their own and that of innocent others. But why would they do that? In the history of life on earth, no organism has willingly died unless, ironically, its own survival or the survival of its children is at stake. So we must conclude that these desperate individuals took desperate action because they felt profoundly threatened. Let us step aside from the heinousness of their acts for a moment and consider that we have just received a monumental (and ghastly) piece of feedback about our global system. Does our culture of freedom threaten their version of the New World? Does the fact that Americans comprise 4% of the world's population and consume 46% of the world's resources provoke a threat? Whatever we may conclude are causes for the events of September 11th, none of these excuse terrorism.

The question now is how can we take defensive action, as a people, as a culture, and as a system, in order to know what to enhance and what to disable. One interesting aspect of a system is that it has a "mind" of its own- this is autopoiesis at work (mind here is used as Gregory Bateson (1972)

would). Almost automatically after an element of disorder or surprise or chaos enters a system, force meets counter-force, action spawns reaction. Simply look at our own systems responses. What trends do we see in the aftermath of this violence? Can we identify what is already emerging in order to diminish the worst aspects of the situation and enhance the best ones to create the results we want?

First, we can clearly see that our ingenuity as a species and as a people remains brilliant and indomitable. Several years ago, after reading Fritjof Capra's *The Web of Life* (1996), I found a new respect for microbes. Bacteria have been around for 3+ billion years and they have invented nearly every major life supporting innovation on the planet: fermentation, photosynthesis, locomotion, DNA, gene trading, nitrogen fixing, even oxygen and respiration-all of life's essential biotechnologies (p. 228). Forget Einstein-bacteria are the geniuses of the earth! Bacteria have the unparalleled capacity to share DNA just by bumping into one another. But we are not so bad ourselves! Look again at Sept 11th-the first plane went into the World Trade Tower; the second plane went into the World Trade Tower; the third plane went into the Pentagon. But . . . when those heroic "organisms", aka humans, on the fourth plane got on their cell phones, starting talking to loved ones, 911, and government officials, events took a different turn. In a mere 30 minutes or so, they learned from the information they had gathered and took informed action; not out of their own self-interest only, for they died, but for the greater good of the whole and for the many others who were saved. Our learning and adaptation and altruistic capabilities are great.

Second, we have been shaken awake by this tragedy to the fragility of life and to reconsidering what is truly important in our own lives. Six Morgan Stanley bond traders, lined up together for a photo in the September 30th *New York Times Magazine* (Saint Louis, 2001), have spoken for all of us:

For a lot of us, all we have known, all we have ever done is commute to the bottom of the trade center and go upstairs. Literally-in winter we never saw the light of day. -Michael Glynn
Coming here and seeing everyone-it was just like Christmas. It is just that feeling of being loved, being around family.
Everything else is secondary, it is not even close. I do not think anybody cared about a municipal bond. -Jack McCutcheon
Before all this, I would be afraid to ask for a day off-or a morning off-to take my kid to the first day of school. It is true.
We spent more time here than with our families. -Chuck Harcourt
I am going to walk out Friday at 12:30 and drive down to see

my daughter for parents' weekend. -Brian Devlin (p. 30)

We have re-learned that relationships matter. May we help to keep that knowledge clearly in our hearts as the memory of these events fades, as it surely will. Here is my secondary hope, that we can take that short step from realizing the importance of our connectedness to others to realizing the importance of our connectedness to the Earth. When you follow social justice, cultural diversity, religious freedom, and tolerance to their logical ends, you find enlightened eco-policy, earth-stewardship, and equitable distribution of resources at the center. These are some of the system responses that we should enhance:

- Our communications and learning capabilities
- Our sense of altruism
- Our awareness of our own mortality and the preciousness of life itself
- And the importance of taking care of and loving each other (and the earth that supports all life)

It is clear on which responses/reactions we hope we can quell, though you may have a different list:

- The use of this catastrophe as a means to political ends (drilling in the Alaska Wilderness, putting conservative judges in place quickly, curtailment of individual rights and freedoms-a police state is *not* sustainable, huge tax cuts for corporations in the guise of an "incentive package")
- The need many people have to divide the world into good and evil, a simplistic and divisive concept
- Hate crimes
- Racial profiling
- Church attendance rising 125% or the purchase of bibles increasing by 27% in the weeks since the attack² ...the result of these actions is not yet clear

These times demand holism, complex thinking and feeling. One of our most critical challenges in this 21st century will be to rededicate ourselves to the protection and honoring of our Earth. How can we move into this global awareness with wisdom and grace? What is sustainable and what will sustain us and the results and qualities we hope for?

- Be an agent for sustainability. Start with the sustainability of your own life. In quite a personal way: Are you getting enough sleep? Do you laugh enough? Is your work of value to you?
- Be thoughtful. Strive to understand the complex systems that are at

work in today's world. · Be ready. Seize every opportunity you have to support positive change. · Be imaginative. Use your creativity and imagination and idiosyncrasy every day.

- Be awake. Waken or restore or nurture your inner spirit-and allow it to inform all your decisions.
- Be embodied! Be connected, sensually/experientially, with friends, family and the Earth. Think globally, live locally. Feel the earth with your hands, listen to the rivers, smell the trees; let us welcome and care for each other and our fellow creatures on Planet Earth.

Maybe we will even become smart enough to anticipate-so that we would not have to run out of fresh water before we look for a solution; so that we would not have to wait until every wild salmon is gone to take the dams down; so that we would not have to wait for a terrorist attack to look at the world around us.³

Aftermath: In The Garden

The plants need water so I accommodate
And, holding the hose, look up-a jet above
For four days our skies have been silent,
only Raven squawking, scolding us for forgetting that life is about life,
nothing more: new blooms burst out on the snapdragon.

We have used God to our own ends,
when the only justifications are inside us, where the blood
moves through veins as muscles push it
up up and valves close behind or it flows out
the river systems of our extremities.

Weep again today.

That verse will have to stand alone-
at the juncture of body and brain,
where the heart's engine-force, simply a fact,
strives to continue, even when events bring down
unimaginable darkness. A massive cloud rolls through the streets.

Endnotes

¹ A basic workbook-style text for understanding System Thinking is Draper L. Kaufman (1980). *Systems, An introduction to systems thinking* (Innovative learning series). Minneapolis, MN: S. A. Carlton

² Statistics quoted on *Marketplace*, an NPR radio program, on October 1, 2001.

³ Suggested additional reading is a wise and moving essay by Wendell Berry, titled Thoughts in the presence of fear. Retrieved from *Orion Magazine* <http://www.oriononline.org/pages/oo/sidebars/America/Berry.html>

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Cate Gable <cgable@axioun.com> is an author, teacher, and business consultant specializing in technology and sustainability. President of Axioun Communications International and senior consultant for Global Futures Foundation. Author of *Strategic Action Planning NOW! Setting and Meeting Your Goals*, Gable writes a column on global ecology and information technology for the Canadian online magazine *Mindjack* and teaches "Strategic Action Planning-Sustainable Business for the New Century" at Hautes Etudes Commerciales (HEC), the top business college in France.