Leadership of Self-Organized Networks
Lessons from the War on Terror

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People often comment that the new leadership models derived from living systems and complexity science couldn't possibly work in "the real world." I assume they are referring to their organization or government, which they experience as a pre-designed bureaucracy, governed by policies and laws, where people are expected to do what they're told and wait for instructions. This "real world" of mechanistic organizations craves efficiency and obedience. It relies on standard operating procedures for every situation, even when chaos erupts and things are out of control.

This is *not* the real world. This world is a man-made, dangerous fiction that destroys our capacity to deal well with what's really going on. The *real* real world, not this fake one, demands that we learn to cope with chaos, that we know how to evoke human ingenuity and skills, that we adopt strategies and behaviors that lead to order, not to more chaos.

In this historic moment, we live caught between a worldview that no longer works and a new one that seems too bizarre to contemplate. To expose this, I want to apply the lens of new science to one of free society's most compelling, real world challenges: How well we understand and respond to global terror networks. Using this new paradigm, high resolution lens, many dynamics become visible that are crucial to understand, yet were obscured from view by our old sight.

The Real World

Here is the real world as described in the new sciences of living systems and complexity theory. It is a world of interconnected networks, where slight disturbances in one part of the system create major impacts far from where they originate. In this highly sensitive system, the most minute actions can blow up into massive disruptions and chaos. But it is also a world that seeks order. When chaos erupts, it not only

In the past few decades, scientists have developed a rich understanding of how living systems organize and function. They describe life's capacity to self-organize as networks of inter-dependent relationships, to learn and adapt, and to grow more capable and orderly over time. These dynamics and descriptions stand in stark contrast to how we humans organize as hierarchies and chains of commands. Although many reject living systems theory as inapplicable to the "real world" of organizations, the real world that appears in the daily news reveals the dynamics of living systems in human affairs quite clearly. Our inability to perceive that insurgent groups are self-organized networks puts us at risk in the War on Terror, because we evaluate the wrong things. Using the lens of living systems, rather than our traditional hierarchical one, we develop a very different sense of who's winning. This lens allows us to accurately assess the strength of terrorist groups, and to see the role of leadership in any self-organized network. We observe that networks are fueled by passion and meaning, not by traditional commanding leadership. They are "webs without a spider," becoming more innovative at the local levels as leadership at the top recedes. Using measures appropriate to assessing the growth and strength of networks, we see that the only way to diffuse self-organized networks of insurgents is to change the fundamental conditions of economics and culture that fuel their rage.

disintegrates the current structure, it also creates the conditions for new order to emerge. Change always involves a dark descent into meaninglessness where everything falls apart. Yet if this period of dissolution is used to create new meaning, then chaos gives way to the emergence of new order.

This is a world that knows how to organize itself without command and control or charisma. Everywhere, life self-organizes as networks of interdependent relationships. When individuals discover a common interest or passion, they organize themselves and figure out how to make things happen. Self-organizing evokes creativity and results, creating strong, adaptive systems. Surprising new strengths and capacities emerge from new relationships.

In this world, the "basic building blocks" of life are relationships, not individuals. Nothing exists on its own or has a final, fixed identity. We are all "bundles of potentiality" as one quantum scientist describes things. Relationships evoke these potentials. We change as we meet different people or are in different circumstances.

And strangest of all, scientists cannot find any independent reality that exists without our observations. We create reality through our acts of observation. What we perceive becomes true for us and it is our own version of reality that becomes the lens through which we interpret events. This is why two people can experience the same event or look at the same information and have very different descriptions of it.

This real world stands in stark and absolute contrast to the world invented by Western thought during the past 400 or so years. We believe that people, organizations and the world are machines, and we organize massive systems to run like clockwork in a steady-state world. The leader's job is to create stability and control because, without human intervention, there is no hope for order. Without strong leadership, everything falls apart. It is assumed that most people are dull, not creative, that people need to be bossed around, that new skills only develop through training. People are motivated using fear and rewards; intrinsic motivators such as learning, contributing and compassion are trivialized. These beliefs have created a world filled with disengaged workers who behave like robots, struggling in organizations that become more chaotic and ungovernable over time.

And most importantly, as we cling ever more desperately to these false beliefs, we destroy our ability to respond to the major challenges of these times.

Leadership of Terrorist Networks

How is it possible that a few thousand enraged people can threaten the stability of the world? How is it possible that the most powerful governments on earth find themselves locked in a costly and fearsome struggle, increasingly powerless to suppress the actions of a small group of fanatics? It's unpleasant to acknowledge the power and success of global terror networks, but they are among the most effective and powerful

organizations in the world today, changing the course of history. They do this without formal power, advanced technology, huge budgets, or large numbers of followers.

Although terrorist networks are very different from traditional organizations, they do meet the criteria generally used to judge effective leadership. These criteria include the abilities to communicate a powerful vision, to motivate people to work hard, to achieve results, to innovate, and to implement change. We ask leaders to create resilient organizations able to survive disruptions and crises, that grow in capacity, that don't lose their way, that continue to progress through a succession of leaders.

If we apply these criteria to the leaders of terrorist networks, they come out with high marks. It's difficult to acknowledge them as our teachers, but we have much to learn from them about innovation, motivation, resiliency and the effective leadership of networks.

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New science explains the behavior of networks in great detail because this is the only form of organization used by living systems (see Capra, 1996; Wheatley & Kellner-Rogers, 1996). The lens of living systems allows us to peer into these terrorist organizations and explore the causes of their success. We can also see how to respond in ways that ensure we stop contributing to their proliferation.

We frequently fight blind in the war on terror because we use factors that apply to our world but not to theirs, to the behavior of hierarchical organizations, not to networks. Failing to use the right lens, we think we are winning. We assess whether bin Laden is still a threat, whether Al-Qaeda is losing its strength, by evaluating its leaders' ability to give orders or to communicate using advanced technology. We assume that Al-Qaeda is weaker now that it's charismatic leader is on the run, hiding in caves, perhaps even dead. We assume that if we prevent communication, terrorists won't receive their orders and therefore won't launch attacks. We assume that if we kill the top leaders, if we decapitate their organization, that young terrorists will slink away from this anarchic, leaderless group.

U.S. military commanders frequently acknowledge they are fighting a new kind of enemy. They describe this enemy as one who learns, changes, and adapts. As soon as U.S. soldiers figure out insurgents' strategies, they change them. Think about the vast resources nations spend on defending themselves against the *last* terrorist attack, even though experience teaches that they never repeat themselves.

The Army's long-term strategy is to develop a fighting force that is as adaptive, nimble and smart as insurgents. (The ten year plan is to develop many more Special Forces.) The military has studied the behavior of networks and the emergence of "netwars" for many years. Before 9/11, they warned of the proliferation of networks, not only transnational terrorist groups, but also black market sales of WMDs, drug and crime syndicates,

fundamentalist and ethno-nationalist movements, immigration smugglers, urban gangs, back-country militias and militant single-issue groups (Arquilla & Ronfeldt, 2001, p. 6). As networks, these groups operate in small, dispersed units that can deploy nimbly, anywhere, anytime. They know how to penetrate and disrupt, as well as elude and evade. Many groups are leaderless (Arquilla & Ronfeldt, 2001, p. ix). They also attack by "swarming," suddenly appearing from multiple directions, coalescing quickly and secretly, then disintegrating as quickly as they appeared (Arquilla & Ronfeldt, 2001, p. 12; also Rheingold, 2002).

Although these groups appear leaderless, they in fact are well-led by their passion, rage and conviction. They share an ideal or purpose that gives them a group identity and which compels them to act. They are geographically separate, but "all of one mind" (Arquilla & Ronfeldt, 2001, p. 9). They act free of constraints, encouraged to do "what they think is best" to further the cause. This combination of shared meaning with freedom to determine one's actions is how systems grow to be more effective and well-ordered. The science thus predicts why terrorist networks become more effective over time. *If individuals are free to invent their own ways to demonstrate support of their cause, they will invent ever more destructive actions, competing with one another for the most spectacular attack.*

People who are deeply connected to a cause don't need directives, rewards, or leaders to tell them what to do. Inflamed, passionate, and working with like-minded others, they create increasingly extreme means to support their cause. Describing Al Qaeda's success, network analyst Barabási notes: "Bin Laden and his lieutenants did not invent terrorist networks. They only rode the rage of Islamic militants, exploiting the laws of self-organization along their journey" (2002, p. 224). An insurgency is not "as is often depicted, a coherent organization whose members dutifully carry out orders from above, but a far-flung collection of smaller groups that often act on their own or come together for a single attack" (Filkins, 2005). In this way, movements that begin as reasonable most often migrate to more extremist measures, propelled there by their members' zealousness. And with passions inflamed, growth is assured. The dramatic acts of one small group inspire many copycat actions in places far distant.

Over time, a network is fueled more by passion than by information. Networks begin with the circulation of information. This is how members find each other, learn from each other and develop strategies and actions. Most attempts for disrupting network activities focus on how to interfere with their communications. But once the network has momentum, it is passion and individual creativity that propel it forward. Communication is still essential for large coordinated attacks, but the proliferation of small, disconnected, lethal attacks does not require information. It only requires passionate commitment and a willingness to martyr oneself. Therefore, as the anger of network members grows in intensity, information plays a lesser role and personal innovation takes over. When we succeed in disrupting network communications, we also incite more local rage. Individuals may not be able to communicate with each other but, in their isolation, they be-

come more creative in designing their own deadly attacks. So we can never adequately measure our success in disrupting a network by only measuring how well we are disrupting their communications.

The essential structure of any network is horizontal, not hierarchical, and ad hoc, not unified. This broad dispersal makes it difficult to suppress any rebel group. "Attack any single part of it, and the rest carries on largely untouched. It cannot be decapitated because the insurgency, for the most part, has no head" (Filkins, 2005). What appears as atomized and fragmented is, in fact, far more lethal than an organized military force. Bruce Hoffman, a Rand Corporation terrorism expert states: "There is no center of gravity, no leadership, no hierarchy; they are more a constellation than an organization....They have adopted a structure that ensures their longevity" (Filkins, 2005).

These descriptions and dynamics do not surprise anyone familiar with living systems science and its observations of how networks self-organize. Networks possess amazing resiliency. They are filled with redundant nodes, so that one picks up if another goes down. And human networks always organize around shared meaning. Individuals respond to the same issue or cause and join together to advance that cause. For humans, meaning is a "strange attractor"—a cohering force that holds seemingly random behaviors within a boundary (see Ch. 7, Wheatley, 2006). What emerges is coordinated behaviors without control, leaderless organizations that are far more effective in accomplishing their goals.

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When we think of organizations as machines, we remain blind to the power of self-organized networks. We keep looking for the leader. We assess an insurgency by whether its leader is visible, available and able to communicate with his forces. This is a profound and dangerous misperception of the leader's role. In early 2006, I listened to interviews with U.S. analysts trying to assess whether bin Laden was still a threat. They were looking at traditional organizational attributes: visibility, technology, chain of command, ability to issue orders, communication channels. Against those criteria, it seemed that bin Laden's power had been severely reduced. But one network expert, Daniel Benjamin, said, "what is working most efficiently is the idea, not the organization" and another, Lock Johnson, pointed out rather than issuing direct orders, "bin Laden is a figure of influence" (Northam, 2006). And Barabási warns that: "Because of its distributed self-organized topology, Al Qaeda is so scattered and self-sustaining that even the elimination of Osama bin Laden and his closest deputies might not eradicate the threat they created. It is a web without a true spider" (2002, p. 223).

The science of how networks emerge out of chaos, organize around shared meaning, and grow more effective provides new and more accurate measures for assessing the strength of Al Qaeda and other insurgencies. These measures focus not on size, structure or chain of command, but on meaning and emotions. They are startlingly different to the traditional ones we use.

1. Is membership growing? British authorities now admit that the number of U.K. terrorists, often citizens raised in England, has risen from a few hundred to many thousands in the past few years.
2. Beyond counting the number of insurgents, can we assess their passion and rage? Are terrorists also angrier? One measure of rage would be to notice what triggers reactions and demonstrations. (Recent examples include the Danish cartoons in 2005 and Pope Benedict's statements in 2006.) Other measures would be the number of attacks, as well as incendiary public rhetoric.
3. Is there a predictable pattern to attacks? Or are they becoming more varied? Greater variety of attacks indicates increased local initiative and less reliance on a central command.
4. Where are attacks occurring? More attacks in surprising places is evidence that the network is growing in scale and reach.
5. What is the impact of our actions? Do our responses fan the flames or pacify the situation?
6. What is the leader's influence? Do people parrot back his interpretations or do they debate them? How does the leader's appearance (in any form) affect the behavior of his followers? Is there any correspondence between the number of attacks and these announcements? Or do attacks continue to escalate independent of his presence? If attacks increase without his visibility, this indicates the network's momentum, "a web without a spider."
7. To determine the network's resiliency, what happens when a node or cell is destroyed? Does this diminish the number of attacks or do they shift to new locations?

These and other measures would lead to a very different assessment of who is winning the war on terror. If networks grow from passion, if Al Qaeda "rides the rage" of angry Islamic militants, then the best strategy for immobilizing terrorist networks is not to kill their leaders, but to defuse the sources of their anger and stop inciting them further. Many network analysts arrive at a similar conclusion—we can only win the war on terror by eliminating the causes of rage. As long as our actions provoke their anger, we can expect more terrorists, more extreme attacks, and the continuing destabilization of the world by a small group of people. Barabási states: "If we ever want to win the war, our only hope is to tackle the underlying social, economic, and political roots that fuel the network's growth. We must help eliminate the need and desire…to form links to terrorist organizations by offering them a chance to belong to more constructive and meaningful webs" (2002, p. 224) We might win small and discrete battles, we might break up different cell groups, but if we do nothing to eliminate their rage, people will continue to form these deadly networks and "the net war will never end" (Barabási, 2002, p. 224).

Similar clarity pervades the work of military strategist and advisor Thomas Barnett, who links economic progress to national security. Barnett notes that one-third of humanity lives outside the global economy in "the

Gap." Their economic poverty has serious consequences because, since the end of the Cold War, "all the wars, and civil wars and genocide have occurred within the Gap" (2005, p. xii). To achieve true security, we must ensure that these populations benefit from economic advantages, thus "eradicating the disconnectedness that defines danger in the world today" (Barnett, 2005, p. xii).

This is the real world that we resist seeing at our own imminent peril. If we continue to seek to control it by exerting ever more pressure on those who hate us, those who feel disconnected, those who are impoverished, we only create a future of increasing disorder and terror. But to see a new way out of this terrifying future, we must learn to understand and see the world differently. Einstein's wonderful counsel that no problem is ever solved by the same thinking that created it defines what we must do. We must understand the behavior of networks in this densely interconnected world. We must understand human motivation and our astonishing capacity to self-organize when we care about something. We must understand that we lose capacity and in fact create more chaos when we insist on hierarchy, roles, and command and control leadership.

There is no more time to think about whether we need to make this shift. We can't afford to continue wandering blindly in the real world, interpreting events through the wrong lens, remaining oblivious to what's going on. But if we can become curious and willing students of life's dynamics, I know we will discover surprising new capacities and insights. Whenever we humans see clearly and understand the real dynamics of any problem, we become brave and intelligent actors in the world. It is time to open our eyes, change our lens, and step forward into actions that will restore sanity and possibility to the real world.

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Author Note

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