
Complex Systems Problems in the War of Ideas

By Steven R. Corman

To say that terrorism is a complex problem is a truism. Usually, someone who says this normally means that the problem is hard to understand and address. But to a natural or social scientist, “complex” has a special meaning that comes from complex systems theory. There are many definitions of complex systems, but I prefer this simple one: “we have taken a ‘complex system’ to be one whose properties are not fully explained by an understanding of its component parts.”[1] This means that we cannot understand terrorism through our usual method of breaking a problem into bits and studying them because the interaction between the bits has *emergent properties* that have important effects on the functioning of the system as a whole.

For a couple of years now, my colleagues and I have been applying complex systems ideas to problems of U.S. strategic communication in the so-called “war of ideas”. This essay reviews two cuts on that issue involving assumptions about the communication process and principles for finding the right message(s). It concludes with two general recommendations for a more realistic and effective approach to strategic communication.

View of Communication

Complex systems ideas are relevant to the government’s overall conception of the communication process. They currently employ a linear view dating back to the 1950s, which assumes that communication is set of transformations that move a message from sender to receiver. It draws heavily on a model of telephone systems developed by Bell Labs engineer Claude Shannon. [2] Shannon’s model has the following components: a *source* inputs a *message* (e.g. talks) into a *transmitter* (the telephone), which encodes a *signal* that is transmitted over a *channel*. The signal, which may be affected along the way by *noise*, makes its way to the *receiver* (the other telephone) where it is decoded into a message (e.g. heard) by the receiver or *destination*.

A formal model of human-to-human communication based on Shannon’s ideas was developed in the late 1950s [3]. We call this the *message influence model* [4]. It has since become a basis for the conventional wisdom of political campaigns, business domains of public relations and marketing, and government/military domains of public diplomacy, public affairs, information operations, and international broadcasting. It assumes that communication is a one-way process consisting of transmission of a message through a modular system directly analogous to the telephone system described above. As long as *fidelity* is maintained—i.e. noise does not degrade the message and the components don’t distort it or fail—the message will reach the destination exactly as it was intended by the source. Accordingly, controlled repetition (for reliability) and optimization of the individual system components are viewed as the key to success.

It is easy to find evidence of this model in operation in the statements and language of government agencies and officials. It is common to hear high ranking officials speak or sending “signals” or “messages” to foreign governments. In 2003, the Bush Administration created the White House Office of Global Communications with a mission to “ensure consistency in messages” by “disseminat[ing] accurate and timely information”. [5] The 9/11 Commission said the government “must do more to communicate its message”. [6] Former Under Secretary of State for Public Diplomacy, Karen Hughes, was well known for her insistence on “message discipline” and instituted a regular dispatch to U.S. embassies called *The Echo Chamber* that contained talking points for use in contacts with foreign publics and media. [7]

The problem with the message influence model of communication is that it’s wrong. When we’re talking about human systems, rather than telephone systems, the transmitter and receiver are people, and the source and destination are their minds. Communication is not as simple as transferring my thoughts to your mind through my mouth and your ears. Complex processes of expression and interpretation mediate our interaction. They are affected not just by the traits and experiences of the people involved, but also by the contexts they find themselves in at the time of communication. For example, “freedom” might mean one thing to an American (freedom *to* do things), but another to a Middle Easterner (freedom *from* corrupting influences).

Much more to the point of complex systems, a critical flaw of the old message influence model is that it treats

the elements as independent bits that we can break down and optimize. Theorist Niklas Luhmann [8] rejected this idea, believing instead that communication is a property of a complex system in which participants interpret one-another's actions and make attributions about the thoughts, motivations, and intentions behind them. The complexity arises because of a *double contingency*. Given two communicators, A and B,

- The success of A's behavior depends not only on external conditions, but on what B does and thinks.
- But what B does and thinks is influenced by A's behavior as well as B's expectations, interpretations, and attributions with respect to A.

This means there are no independent transmitters and receivers transferring independent meanings back and forth, as the old model would have it. Instead communication is an emergent property of the interaction of A and B.

This thinking leads to a new perspective that we call the *pragmatic complexity model* [4]. It views communication as a process of dialog rather than message transmission, and it carries a very different set of assumptions. For instance, it assumes that success—in the sense of causing some predictable result—is not the default outcome of communication. On the contrary, it's likely that messages will be interpreted in ways that one doesn't expect and doesn't want. Communication systems also have inertia (another emergent property) that causes them to interpret messages to fit pre-existing expectations. In that case, the repetition-for-reliability principle of the old message influence model is *exactly* the wrong way to bring about change.

Finding the Right Message(s)

The second way complex systems thinking is important in strategic communication has to do with the search for the right message(s). The old model of communication carries over to a belief in a straightforward search process. We addressed this issue in another recent paper [9] that applies Stuart Kauffman's rugged landscape model. [10] Think of a landscape as an array of possible communication solutions. A solution is a combination of features like message, communicator, medium, audience, timing, etc. Each solution has a particular quality or *fitness level*, represented by the height of its point on the landscape (see Figure 1) [11]. On a simple landscape there is one peak, with a best solution at the top surrounded by solutions with diminishing levels of fitness. But on a rugged landscape there are multiple peaks of varying fitness.

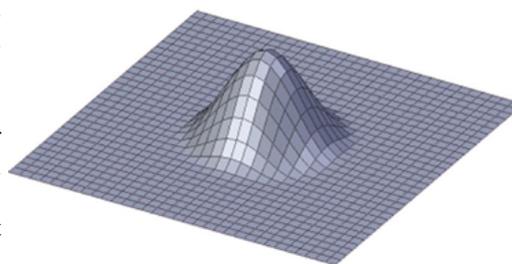
The two landscapes have radically different requirements for finding the right message. Simple landscapes are *modular* in the sense that there is limited interaction between their parts. To find the optimal solution you can optimize the parts, one at a time, making adjustments that move you in an uphill direction (i.e. improve fitness), because uphill *always* leads to the optimal solution.

Rugged landscapes, in contrast, are *integral*. Their parts are tightly coupled, meaning that you can't change one thing without affecting everything else. Here incremental improvement in performance is not enough because it might lead you to the top of a suboptimal peak. Depending on where you start, you might actually have to move downhill for a time in order to reach the optimal peak. Rather than systematic search, on a rugged landscape you need experimentation based on random variation, a more evolutionary approach.

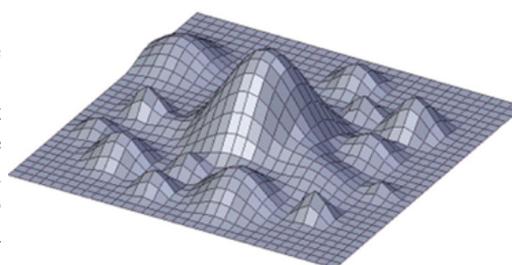
Just as the U.S. government believes in the simple message influence model of communication, it also believes the search for the right message takes place on a simple landscape. The U.S. National Strategy for Public Diplomacy and Strategic Communication (NSPDSC) [12] released last year provides a good example. It assumes

Figure 1

A. Simple Landscape, $K \leq 1$



B. Rugged Landscape, $K > 1$



the best message has already been found and sets it out in a set of broad talking points that promote American values and strategic objectives. Most of the document talks about how to optimize various aspects of delivering the message, such as coordination between agencies involved, making use of better spokespeople, and so on.

But in fact, the landscape of U.S. Strategic Communication is a rugged one because of the tight coupling of elements of the system. Multiple agencies have responsibility for strategic communication and sometimes work at cross purposes. Some spokespeople are better suited for some audiences than others. Messages intended for one audience “leak” to other audiences creating mixed messages. Audiences, even as conceived in the NSPDSC, are not independent: “Girls,” one of its target audiences, are also “youth,” another of its target audiences. These are but a few examples of interdependencies in the system that make the search landscape rugged.

What to Do

Specific recommendations associated with the pragmatic complexity model and the rugged landscape approach are outlined in our full white papers.[4], [9] But there are two underlying themes in these recommendations that I discuss here. First, both of the outdated approaches described above carry assumptions that strategic communication can best be optimized through control. In the message influence model, this is achieved by having a restricted message and hammering on it using repetition. In the simple landscape approach, control is achieved by using methodical trial and error search, making incremental improvements in the message by optimizing one variable at a time.

For the reasons discussed above, these approaches are unrealistic and actually lead to sub-optimal outcomes on our “war of ideas”. So the first order of business is for the U.S. to let go of the idea that it can control the strategic communication system. Accepting the complexity in the system, rather than fighting it, opens up new possibilities for action. For example, if they abandon the idea that they can tightly control which audiences receive which messages, they can start thinking about how they might exploit interaction between the different audiences. Just as Wall Street traders accept the complexity of the markets and profit by effectively “going with the flow”, strategic communicators can accept the complexity of the system and use it to their advantage.

Second, whereas both of the outdated approaches described above emphasize small incremental changes and assessment, the complex system view requires an approach more like evolutionary experimentation. For instance, an important implication of the pragmatic complexity view of communication is that communication systems often become “stuck” in a pattern where all messages are assimilated to a standard interpretation—much like the current situation where U.S. messages damage its credibility, if they have any effect at all. This situation requires a disruption that will kick the system out of its inertia and cause it to reorganize in a new configuration that might be more favorable to the U.S.

On a rugged landscape, controlled searches never take you far from where you start, which is most likely a spot on the floor or a minor peak. To find the optimal message(s) you need to search many different spots on the landscape by changing multiple variables at once in a random variation pattern. Such a strategy makes it much more likely that you will find the optimal peak, or at least get close to it.

To change the strategic communication game the United States should abandon control-oriented methods that were cutting-edge in the Eisenhower Administration. It should let go of the idea that it can break down communication system into bits and optimize them, embracing more modern approaches that view communication as an emergent feature of a complex system. In doing so, it can exploit the opportunities presented by complexity and use more realistic methods for changing the game and finding the best plays.

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NOTES:

[1] R. Gallagher and T. Appenzeller, ‘Introduction’, *Science*, Vol. 284 No. 5711, 1999, p. 79.

- [2] Shannon, C. and Weaver, W. (1949). *The Mathematical Theory of Communication*. Urbana, IL: University of Illinois Press.
- [3] Berlo, D.K. (1960). *The Process of Communication: An Introduction to Theory and Practice*. New York: Holt, Rinehart and Winston.
- [4] Corman, S. R., Trethewey, A., & Goodall, B. (2007, April). *A 21st Century Model for Communication in the Global War of Ideas: From Simplistic Influence to Pragmatic Complexity*. Report No. 0701. Consortium for Strategic Communication, Arizona State University. Available online: http://comops.org/publications/CSC_report_0701-pragmatic_complexity.pdf.
- [5] The White House (2003, January 24). Establishing the Office of Global Communications. Executive order 13282, Office of Policy Coordination and International Relations.
- [6] Kean, T.H., et al. (2004). *The 9/11 Commission Report*, pp. 376-377.
- [7] Phil Taylor, Institute of Communication Studies, University of Leeds, UK. <http://ics.leeds.ac.uk/papers/vp01.cfm?outfit=pmt&folder=2053&paper=2438>
- [8] For the English translations see Luhmann, N. (1995). *Social Systems*. Stanford University Press, Stanford, CA. (Originally published 1984). For an easier to read introduction, see Chapter 16 of Münch, R. (1994). *Sociological theory: From the 1850s to present*. London: Burnham, Inc.
- [9] Corman, S. R. & Dooley, K.J. (2008, January). Strategic Communication on a Rugged Landscape: Principles for Finding the Right Message. Report No. 0801, Consortium for Strategic Communication, Arizona State University. Available online: <http://comops.org/article/121.pdf>
- [10] Kauffman, S. A., 1993. *Origins of Order: Self-Organization and Selection in Evolution*. Oxford: Oxford University Press.
- [11] Adapted from <http://caimrvaron.rotahall.org/2007/01/02/on-fitness-landscapes> by Koen Crolla. Used by permission.
- [12] <http://www.state.gov/documents/organization/87427.pdf>
- [2] Shannon, C. and Weaver, W. (1949). *The Mathematical Theory of Communication*. Urbana, IL: University of Illinois Press.
- [3] Berlo, D.K. (1960). *The Process of Communication: An Introduction to Theory and Practice*. New York: Holt, Rinehart and Winston.
- [4] Corman, S. R., Trethewey, A., & Goodall, B. (2007, April). *A 21st Century Model for Communication in the Global War of Ideas: From Simplistic Influence to Pragmatic Complexity*. Report No. 0701. Consortium for Strategic Communication, Arizona State University. Available online: http://comops.org/publications/CSC_report_0701-pragmatic_complexity.pdf.
- [5] The White House (2003, January 24). Establishing the Office of Global Communications. Executive order 13282, Office of Policy Coordination and International Relations.
- [6] Kean, T.H., et al. (2004). *The 9/11 Commission Report*, pp. 376-377.
- [7] Phil Taylor, Institute of Communication Studies, University of Leeds, UK. <http://ics.leeds.ac.uk/papers/vp01.cfm?outfit=pmt&folder=2053&paper=2438>
- [8] For the English translations see Luhmann, N. (1995). *Social Systems*. Stanford University Press, Stanford, CA. (Originally published 1984). For an easier to read introduction, see Chapter 16 of Münch, R. (1994). *Sociological theory: From the 1850s to present*. London: Burnham, Inc.
- [9] Corman, S. R. & Dooley, K.J. (2008, January). Strategic Communication on a Rugged Landscape: Principles for Finding the Right Message. Report No. 0801, Consortium for Strategic Communication, Arizona State University. Available online: <http://comops.org/article/121.pdf>
- [10] Kauffman, S. A., 1993. *Origins of Order: Self-Organization and Selection in Evolution*. Oxford: Oxford University Press.
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- [12] <http://www.state.gov/documents/organization/87427.pdf>