Thinking Straight: Cognitive Bias in the US Debate about China

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Of the axioms, dictums, and mantras echoing through the US foreign policy and intelligence debates in the wake of controversy over estimates of Iraqi weapons of mass destruction, none reverberates more than: be wary of mind-set and bias and constantly reexamine assumptions. The fact is, however, that genuine wariness and thorough reexaminations have been rare and attention has tended to focus on the more easily recognizable non-cognitive biases, the “low-hanging fruit,” that eclipse much more ingrained cognitive biases and the flawed assumptions they engender.1

Nowhere is this tendency more clearly evident than in the continuing US debate over China, which has long been conducted as if single-outcome predictions of China’s long-term future are possible and that the United States is capable of promoting or altering a predicted outcome. I will argue here that these two assumptions are largely the result of an unrecognized, deeply ingrained, and enduring cognitive bias that results in the misapplication of a linear behavioral template to China, which, like all nation-states, in reality behaves “nonlinearly.”2

In making my case, I will explain how cognitive bias fosters this misapplication, discuss the illusions of certainty—especially of predictability and influence—that this misapplication promotes, and examine the complementary non-linear perspectives that might correct the imbalance. Finally, I will suggest how such nonlinear perspectives might be cultivated and applied to—in the words of Sherman Kent—“elevate the level of debate.”3

1 “Cognitive biases are mental errors caused by our simplified information processing strategies. It is important to distinguish cognitive biases from other forms of bias, such as cultural bias, organizational bias, or bias that results from one’s own self-interest. In other words, a cognitive bias does not result from any emotional or intellectual predisposition toward a certain judgment, but rather from subconscious mental procedures for processing information.” From Richards J. Heuer, Psychology of Intelligence Analysis (Washington, DC: Central Intelligence Agency, 1999), 111-12.

2 This largely unconscious application of a simplifying behavioral template is an excellent example of “bounded” or limited rationality, a concept first advanced by Herbert Simon. “Because of limits in human mental capacity . . . the mind cannot cope directly with the complexity of the world. Rather, we construct a simplified mental model of reality and then work with this model. We behave rationally within the confines of our mental model, but this model is not always well adapted to the requirements of the real world.” Cited in Heuer, 3.

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It’s Not Rocket Science; It’s More Complex.

The term “linear,” when applied to a system—any group of components that together interact to form a larger whole—describes behavior of the whole which is additive, that is to say equal to the sum of its parts.4 By extension, a linear approach to understanding a system holds that once the behavior of a system’s component pieces are understood individually, one needs only to add them up to understand and predict the system’s behavior as a whole. This analytical methodology (from the Greek analyein meaning “to break up”), often termed “reductionism,” “linear reductionism” or “Newtonian reductionism” is, by and large, the default Western—and certainly American—approach to information processing.5

The main limitation of this approach, as the term reductionism suggests, is that it only works consistently with systems that are genuinely reducible.

Linear systems tend to be predictable and subject to manipulation.

Since the components of linear systems do not change or adapt their fundamental behavior as interaction occurs, the components of such systems, and consequently such systems as a whole, can be readily understood via reductionist approaches. Moreover, as a result of this “constancy of behavior,” linear systems also tend to be predictable and subject to manipulation. For example, mechanical systems such as the solar system or ballistic missile systems tend to be highly linear. Consequently, the movements of the planets and the trajectories of ballistic missiles are theoretically, if not always in practice, predictable and pliant.6

Linear reductionist approaches are significantly less useful for understanding nonlinear systems—those systems in which the behavior of the whole is not necessarily equal to the sum of the parts. For one thing, nonlinear systems are not readily reducible because the behavior of their components can change, evolve and adapt as interactions occur. As a result, the components of nonlinear systems cannot realistically be considered without regard to the others. A good example of a nonlinear system is the international system, which has components (supra-national organizations, nation-states, non-state actors, etc.) that are also systems in themselves and unique subcomponents (nation-states, individuals, families, social/political/commercial organizations, etc.) which often are systems as well.

As a result of this “system of systems” character and the

4 What this article refers to as a “nonlinear” system is more commonly, and perhaps more accurately, referred to as a “complex” system. “Nonlinear” is more often used than “complex" because most people confuse the scientific distinction between the term complex (i.e., as it is used here to mean “having many interactions that can lead to untold changes in behavior”) and its more common usage (i.e., having many components). Plotted on a graph, linear equations form smooth lines—hence the name linear. See M. Mitchell Waldrop, Complexity: The Emerging Science at the Edge of Order and Chaos (New York: Simon and Schuster, 1992), 64.

5 Although reductionism is usually associated with Newton, who, in effect, codified it in his laws of motion, the term is rooted in Greek philosophy and Aristotle, who emphasized “illumination through disaggregation.” Although this article focuses on American perspectives, it is worth noting that Chinese thought—at least that thought freed of Marxist-Leninist ideology—appears significantly less inclined toward reductionism than most Western intellectual approaches. (See Benjamin Schwartz, “On the Absence of Reductionism in Chinese Thought” in China and Other Matters (Cambridge, MA: Harvard University Press, 1996). This, in turn, points to contrasting US and Chinese approaches to foreign policy. Henry Kissinger has written that “Americans think in terms of concrete solutions to specific problems. The Chinese think in terms of a process that has no precise culmination.” See Does America Need a Foreign Policy? Toward a Diplomacy for the 21st Century (New York: Simon and Schuster, 2001), 137–38.

6 It has been argued that CIA is particularly guilty of misapplying linear, “hard science” approaches: “In his 1949 book Strategic Intelligence for American World Policy, [Sherman] Kent argued that the truth is to be approached through a systematic method, ‘much like the method of the physical sciences.’ This was at the time, just after the war, when economists, urban planners and social engineers believed that human affairs could be understood scientifically, and that the social sciences could come to resemble hard sciences like physics.” David Brooks, “The C.I.A.: Method and Madness,” New York Times, 3 February 2004.
Nonlinear systems tend to be messy and resistant to thorough understanding via excessively neat, linear, reductionist approaches.

Unrealistic Expectations

In addition to additivity, linear systems also have identifiable cause-and-effect relationships, repeatability and proportionality between inputs and outputs—the properties that make linear systems susceptible to prediction and manipulation, the hallmarks of America’s foreign policy debate in general and its China debate in particular.9

The Newtonian term “trajectory” almost invariably accompanies American discussion of futures; it is typically a manifestation of the misapplication of a linear, behavioral template. Formally defined, the term describes smooth, evolutionary, continuous—and predictable—movement over time, such as those of the planets in accordance with Newton’s laws of motion. By contrast, the term does not apply to the abrupt, revolutionary, or discontinuous perturbations that inevitably—but unpredictably—occur in nonlinear systems. In other words, the use of the word “trajectory” is really just another...

9 This reductionist mind-set is clearly illustrated in the terms with which foreign policy tends to be discussed. For instance, one often hears of foreign policy analysis or intelligence analysts but rarely, if ever, of foreign policy synthesis or intelligence synthesists. Moreover, when synthesis is mentioned, it is usually thought of as organizing and summarizing information and not as a distinct intellectual approach or perspective.


11 In the popular literature, these extremes have probably been best captured (if only by the juxtaposition of their titles) by The Coming Conflict with China (Richard Bernstein Ross Munro, Knopf, 1997), which posits an increasingly powerful China on track to challenge US primacy, and The Coming Collapse of China (Gordon Chang, Random House, 2003), which argues that China’s many internal difficulties will soon plunge it into another of its periodic internal paroxysms.
Cognitive Bias

Cognitive (linear) bias explains how single outcome predictions are made; non-cognitive biases determine what predictions are made.

This characterization of the so-called "conventional wisdom" isolates and extrapolates the economic trends—rapid economic growth rates—that support the projection. Moreover, the projected trajectory clearly is connected to the non-cognitive bias that anticipates a cause-and-effect between continued economic growth and world power and rivalry with the United States.

Had the non-cognitive biases of those holding the "common wisdom" in this instance been different—say, inclined to the "doomed China" scenario—the trajectory they would have projected would certainly have been quite different as well. A predictor with a more pessimistic view of China's future might have focused on (i.e., isolated and extrapolated) a completely different set of readily available economic trends (rising unemployment, teetering banks, endemic corruption, etc.). Moreover, such a predictor would probably have been inclined to anticipate a very different cause-and-effect dynamic, even if he had started from the same isolated trend as the "rising China" forecaster. For example, the cause-and-effect chain of the "doomed China" predictor might envision the continuation of rapid economic growth leading to unfulfilled high expectations and social and political unrest, internal turmoil, and conceivably, collapse. To sum up this predictive process, linear cognitive bias explains how single-outcome predictions are made and

12 Richard K. Betts, "Fixing Intelligence," Foreign Affairs, January/February 2002: 49. (Emphasis added.)

non-cognitive biases largely determine what predictions are made.

Illusions of Influence

Lest one believe that excessive reliance on linear perspectives leads only to illusory single-outcome predictions, it is important to recognize that linear bias also fuels the illusion that the United States can effectively influence (promote or prevent) projected outcomes.\(^\text{14}\)

US policies aimed at shaping outcomes have long been framed and debated in the largely linear and mechanistic terms of linkages, levers, inertia, momentum, tension, etc. In this context, China tends to be discussed as if it were a physical object that can be pressured, pushed, pulled, or propelled. Examples were painfully (to me) plentiful in the debate over the extension of Normal Trade Relations (NTR) to China. Those favoring the extension argued that NTR and the economic engagement it presumably promotes would inevitably leverage China to make desirable (from the US perspective) economic, political, and social reforms. Those opposed argued that denial of NTR would be an equally, or even more, effective lever for desired change in China. As contrasting as these arguments were, they had in common the fundamental belief that NTR gave the United States an effective and predictable “lever” with which to achieve a specific outcome in China.

This notion of leverage was underlined clearly in the flurry of commentary that surrounded the collision of an American surveillance aircraft and a Chinese fighter aircraft in April 2001. Take, for instance, this editorial from the New Republic that took to task those who questioned the assumption of American leverage:

Also abounding was the bizarre notion that the United States has little or no leverage over China.... This is nonsense. The United States buys 33 percent of China’s exports. China buys 1 percent of the United States’ exports. This looks like a lot of leverage to us. There is also the matter of China’s membership in the World Trade Organization, and of the Olympics that Beijing fervently desires to host, and of the sophisticated weaponry that Taiwan wishes to acquire from America. Levers, levers, levers.\(^\text{15}\)

For all its passion and apparent good sense, this passage’s emphasis on economic leverage and levers illustrates how the linear template (in this case one providing for proportionality and identifiable cause-and-effect), when erroneously applied to a nonlinear system, provides the illusion of calibrated influence. Economies, like the nation-states and international system to which they are intertwined, are nonlinear and notoriously resistant to precise manipulation (never mind prediction). Despite this fact, however, the public continues to expect, and policymakers continue to claim (at least at opportune moments), that such precise manipulation is possible. Why this disconnect? Well, the answer, not surprisingly, is that when looked at through a linear prism, the economy takes on a mechanical character that permits it to be discussed—however artificially—as though it were a ball of clay that can be mechanically manipulated, physically propelled, or mathematically predicted à la Newton’s laws of motion.\(^\text{16}\)

Linear processes have their own logic and can make sense, but they really only give those who look at systems in such ways arguments for a single possible scenario—not the much wider array of plausible outcomes or effects that exist in complex systems.

\(^\text{14}\) Simultaneously believing in predicted continuity and the ability to decisively influence or change China’s course requires a significant degree of “cognitive dissonance.” It is another indicator of linear bias.

\(^\text{15}\) The New Republic, 23 April 2001.

\(^\text{16}\) Whereas Newton’s linear laws of motion came to shape so much Western thinking and thus were practically applied universally to just about any system—including China. Some of Newton’s Enlightenment contemporaries, notably Leibniz and Montesquieu, searched for systematic “keys” specific to China. Jonathan Spence. The Chan’s Great Continent: China in Western Minds (New York: W.W. Norton & Co., 1998), chapter 5.
tems. Thus, in the broader sense, these approaches fail to achieve Gell-Mann’s “look at the whole” and in doing so wash out complex dynamism, with its alternative outcomes, double-edged swords, and unexpected effects that are inherent in the behavior of nonlinear systems.

A Complementary Nonlinear Perspective

If the debates such as the one taking place over China are ever to reasonably reflect reality, they must first incorporate the nonlinear complements of the linear characteristics on which such debates have tended to focus. In other words, analysts, policymakers, and commentators must appreciate the distinct behavioral characteristics of nonlinear systems as well as their analytical and policymaking implications. Below are nonlinear complements and their implications, illustrated using the Chinese experience:

Nonlinear systems are synergistic, not additive; the big picture must be kept in mind and urges to simplify controlled. First and foremost, a complex system’s essence lies in interaction of its parts, not in any individual component. These interactions may be direct or indirect, obvious or subtle. From both analytical and policymaking perspectives, this characteristic makes for a daunting and often messy challenges in that it requires a highly interdisciplinary perspective. Here, the NTR debate again is instructive in that it attempted to separate economic issues from security and human rights issues. There were reasons for attempting this so-called “de-linkage”—including simplification, manageability, and outright political expediency—but any such separation was unavoidably artificial.

Nonlinear systems have uncertain cause-and-effect relationships; side effects and unintended consequences must be considered inevitable. The wide interconnectivity and interaction of most complex systems makes cause-and-effect relationships ever changing and often uncertain. With respect to China’s entry into WTO, for example, no one can be certain of the precise social, political, and economic effects, even though contradictory prognostications are confidently bandied about. These include the judgment that the effects of WTO will be wrenching, causing rising unemployment and demands for political change, on the one hand, and the assertion that WTO will lead to exactly the opposite: extension of the political status quo because WTO-spurred economic growth will give the current regime greater legitimacy. Both of these judgments, often made with inordinate certainty, rely on dubious linear calculations that imply precision where none exists.

The behavior of nonlinear systems cannot be repeated; arguments by analogy will never apply precisely. The dynamics of each system are unique, dependent on its own components, initial conditions, interactions and timing. In complex systems, exact circumstances do not repeat themselves; recreation or repetition of past dynamics in other instances is impossible. Policymakers in particular must be made to understand this because, too often, they seek precedents to validate their choices. Therefore, those who explain situations to policymakers must guard against stretching analogies to fit other circumstances. The benefits of considering historical precedents often come more from the recognition of contextual differences (contrasts) than from the illumination of apparent similarities (comparisons). Thus, for example, the successful containment of the USSR does not necessarily provide a valid or useful analogy for the application of similar strategy and tactics against China. The judgment that trade and economic engagement seemingly helped to advance Taiwan’s democratic transformation and therefore will...
Metaphors both reflect and reinforce the mind-set from which they spring—no matter how unrealistic that mind-set may be.

Changing the Metaphor, Methodology, and mind-set

Evolution, adaptation, side effects, interactions, ripeness, etc.: these are the terms and concepts of biologists, psychologists, and medical doctors, and the metaphors of the life sciences must replace the mechanical metaphor of the mechanical and physical sciences if nonlinear systems are to be better understood and better debated. For foreign policy practitioners, this means learning to think, converse, and act more like the professionals in the life sciences. For instance, just as doctors need to think about interactions (drug combinations), side-effects (allergic reactions), particularity (patient specifics: age, weight, blood type, etc.), and timing (stages of a particular illness, age of patient, etc.), analysts must think similarly. Correspondingly, policymakers need to formulate and prescribe policies that, like effective medical treatments, demonstrate balance (both curative and preventative elements), flexibility (adjustable), and nuance (subtlety), and both must abandon the prevailing mechanical lexicon (trajectories, leverage, inertia, momentum, tension, tipping, delinking, etc.).

Selection of new metaphors is bound to be controversial as many who read this will undoubtedly be inclined to dismiss this discussion as much ado over figures-of-speech or semantics. After all, mechanical terms and concepts seem inextricably infused in the foreign policy lexicon. Failure to try, however, would be a mistake. Metaphors both reflect and reinforce the mind-set from which they spring—no matter how unrealistic that mind-set may be—and realistic policy cannot be expected to emerge from unrealistic discourse.

I will concede that changing metaphors and mind-sets will take time—the US national security establishment is, after all, a complex system and the time may not be ripe for a radical change in customs and language. For the near-term, more immediately applicable approaches will need to be found.

Fortunately, proven methodological approaches exist to help set the stage for a transition. For instance, the alternative

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20 Metaphors are only one approach to “modeling” nonlinear systems. Another promising approach is agent-based computer modeling (ABM). For an excellent, concise survey of the advances being made in this field and potential applications, see Jonathan Rauch, “Seeing Around Corners,” the Atlantic Monthly, April 2002.
Cognitive Bias

TOOLS TO COUNTER LINEAR BIAS AND MIND-SET IN THE INTELLIGENCE COMMUNITY

Culturally embrace uncertainty.

Thematically: Emphasize the understanding of possibilities, not prediction.

Methodologically: Make alternative scenarios/futures a “mainstream,” not an “alternative,” approach to tradecraft. Emphasize the explication of the assumptions, key variables, and signposts for each scenario.

Editorially: Resist the temptation to try to wash out analytical uncertainty by eliminating caveats.

Managerially: Do not necessarily pressure analysts to “make a call” in the face of significant uncertainty.

Metaphorically: Recognize that language both reflects and reinforces bias/mind-set, and consequently, consciously adopt more nonlinear terminology and metaphors. (A good symbolic starting point for CIA might be modification of the Kent School’s name to read: The Sherman Kent School for Intelligence Analysis and Synthesis.)

Training: Require all analysts, managers, and editors to take a course in linear/nonlinear thinking and dynamics. Such a course should be developed and taught by the Kent School.

Increase computer modeling, visualization, and simulation.

Make a concerted and serious effort to pursue the development of agent-based modeling (ABM), visualization, simulation, and other advanced computer tools/techniques for exploring and explaining the dynamics of highly complex/nonlinear systems.

In sum, the task before participants in a policy debate such as the one taking place on China is to embrace uncertainty in a way that permits analysts to acknowledge complexity and ambiguity but finds a way to satisfy a policymaker’s desire for analysis that is sufficiently focused to offer real utility in the policymaking process. In the near-term, greater use of alternative scenario methodology would help. From there, it would not be unreasonable to hope for successful, longer-term efforts in the Intelligence Community and elsewhere to change the metaphor and to establish a truly nonlinear mind-set.

An Uncertain Future? Hopefully.

Having so far discussed linear-ity/nonlinearity in theoretical, practical, metaphorical, and methodological terms, it is worth finishing the job in largely historical ones. For if there is one especially perverse way in which linear bias, mind-sets and assumptions have distorted the American China debate, surely it is the zero-sum perspectives, antagonism, hubris and sordidly which they have promoted and made the debate’s defining features. In particular, linear notions of knowable and predictable cause and effect have

scenario/outcome/future methodology, with its illumination of key uncertainties and potential discontinuities, is an approach that acknowledges complexity/nonlinearity and identifies warning issues and policy opportunities—things policymakers expect from useful analysis. Of course, there will always be policymakers who resist this approach on the grounds that the provision of alternative scenarios simply muddies the water and reveals hesitancy on the part of analysts to take risks or make calls. If confronted with such a charge, however, an analyst might do well to offer policymakers the following statement of one of their own:

Policymakers benefit when they can take into account what the analysts see as the full range of possible outcomes on a tough issue... analysts should not usurp the decision role of policymakers by prematurely limiting the options on the table.21


22. “Alternative scenario methodology” has not reached its full potential; in the not-too-distant future computer-enhanced “scenario generation” (another form of ABM) may permit significant advances in this methodology.
encouraged the development of simplistic, artificially rigid, and false ("either-or/all-or-none") policy constructs. This was apparent a half-century ago during the "who lost China" debate, and it is equally apparent in the continuing "containment/engagement" and "Red Team/Blue Team" debates that discount the potential for differing perspectives and more flexible approaches.23

These examples, if taken as historical bookends for the modern debate, illustrate how excessively linear perspectives have helped feed the damaging cycle of unrealistic expectations, disappointment, infighting, and shrill incoherence to which the China debate has all too often succumbed. However, they also offer a useful contrast to the rare exceptions to this pattern that suggest things need not be this way. Mention of the "who lost China?" debate brings to mind historian Barbara Tuchman's eminently reasonable treatment of that inane question and its implications when she concluded:

This assumption [that the U.S. had the wherewithal to save Nationalist China from her Communist fate] might have been true if Asia were clay in the hands of the West. But the "regenerative idea"... could not be imposed from outside... [America's] mission failed in its ultimate purpose because the goal was unachievable. The impulse was not Chinese. Combat efficiency and the offensive spirit, like the Christianity and democracy offered by missionaries and foreign advisers, were not indigenous demands of the society and culture to which they were brought..... China was a problem for which there was no American solution.24

While Tuchman probably did not think of herself as a nonlinearist, this passage is brimming with nonlinearity: positive feedback/reinforcement, ripeness, uncertain cause-and-effect, and incompatibility with physical/mechanical manipulation. And just as this nonlinear perspective helped bring a dose of warming realism to a debate that had been largely frozen for some two decades, one hopes that it might also serve as an example of

23 Although temporarily focused on other things since 9/11, the self-styled "Blue Team" refers to those analysts, commentators, and policymakers for whom China's future presents little uncertainty, especially in terms of the threat that it will pose. The "Red Team"—a term with McCarthyite overtones—is the moniker Blue Team members apply to those participants in the debate who are more ambivalent about China's future.
