

The Strategic Game of ? And ?

John R. Boyd

Edited by Chet Richards and Chuck Spinney
Produced and designed by Ginger Richards

For information on this edition, please see
the last page.

DEFENSE AND THE **NATIONAL**
INTEREST

www.d-n-i.net

June 2006

? **Raises question** ?

What lies hidden under the question marks?

Put Simply

That is what the aim or purpose of this presentation is all about—to find and make evident what lies hidden under the question marks!

For openers

What is strategy?

Outline

- What is strategy?
- What is the aim or purpose of strategy?
- What is the central theme and what are the key ideas that underlie strategy?
- How do we play to this theme and activate these ideas?

Approach

- Make a general survey
- Condense to essential elements
- Place in strategic perspective
- Implementation

? **Raises question** ?

Why do we want to use this approach?

Illustration

- Imagine that you are on a ski slope with other skiers—retain this image.
- Imagine that you are in Florida riding in an outboard motorboat—maybe even towing water-skiers—retain this image.
- Imagine that you are riding a bicycle on a nice spring day—retain this image.
- Imagine that you are a parent taking your son to a department store and that you notice he is fascinated by the tractors or tanks with rubber caterpillar treads—retain this image.

Now imagine that you:

- Pull skis off ski slope; discard and forget rest of image.
- Pull outboard motor out of motorboat; discard and forget rest of image.
- Pull handlebars off bicycle; discard and forget rest of image.
- Pull rubber treads off toy tractors or tanks; discard and forget rest of image.

This leaves us with

Skis, outboard motor, handlebars, rubber treads

Pulling all this together

What do we have?

Snowmobile

? What does this example suggest ?

To discern what is going on we must interact in a variety of ways with our environment.

In other words

We must be able to examine the world from a number of perspectives so that we can generate mental images or impressions that correspond to that world.

More to the point

We will use this scheme of pulling things apart (analysis) and putting them back together (synthesis) in new combinations to find how apparently unrelated ideas and actions can be related to one another.

General survey

Disciplines or activities to be examined

- Mathematical Logic
- Physics
- Thermodynamics
- Biology
- Psychology
- Anthropology
- Conflict

Very nice

but

? Where do we begin ?

Human Nature

Goal

- Survive, survive on own terms, or improve our capacity for independent action.

The competition for limited resources to satisfy these desires may force one to:

- Diminish adversary's capacity for independent action, or deny him the opportunity to survive on his terms, or make it impossible for him to survive at all.

? Raises the question ?

In a most fundamental way how do we realize this goal or make it difficult for others to realize this goal?

Selections from newspapers

“Nerve Cells Redo Wiring ...”, by Boyce Rensberger, *The Washington Post*

Dale Purvis and Robert D. Hadley ... have discovered that a neuron’s fibers can change significantly in a few days or weeks, presumably in response to changing demands on the nervous system ... Research has shown neurons continually rewire their own circuitry, sprouting new fibers that reach out to make contact with new groups of other neurons and withdrawing old fibers from previous contacts ... This rewiring process may account for how the brain improves one’s abilities such as becoming proficient in a sport or learning to play a musical instrument. Some scientists have suggested that the brain may use this method to store facts ... The research was on adult mice, but since all mammalian nervous systems appear to behave in similar ways, the researchers assume that the findings also apply to human beings.

“The Soul of the Machine”, by Richard M. Restak, *The Washington Post Book World* Review of “Neuronal Man”, by Jean-Pierre Changeux

Changeux suggests that the complexity of the human brain is dependent upon the vast number of synapses (connections) between brain cells ... these synaptic connections are established or fall by the wayside according to how frequent they’re used. Those synapses which are in frequent use tend to endure (‘are stabilized’) while others are eliminated ... In other words ... interactions with the environment ... [exert] ... tremendous influence on the way the human brain works and how it has evolved.

Selections from newspaper (continued)

“Brain Cells Try To Battle Alzheimer’s ...”, by Jan Ziegler, *The Washington Post*

A post mortem study of brains of Alzheimer’s victims, (reported on by Dr. Carl Cotman and colleagues) showed that cells tried to repair connections destroyed by the disease by sprouting new branches ... A progressive, degenerative disease, it can cause memory loss, confusion, difficulty in speech and movement, inability to recognize even family members ... A characteristic of the disease is the death of neurons, or nerve cells, that connect to each other by long fibers, which forces the brain to live with fewer and fewer connections. Analyzing cells from the hippocampus of six deceased Alzheimer’s patients, Cotman and colleagues, found that axons—the output fibers of nerve cells, responsible for transmitting signals through the nervous system—start to sprout, reforming the connections between remaining cells ... Ultimately however, the sprouting process cannot keep up with destruction. Either, the sprouting stops, or too many nerve cells die ...

“Rats Lost Muscle, Bone Strength in Space Flight”, by Paul Recer, *Erie Daily Times*

Space rats that spent seven days in orbit suffered massive losses of muscle and bone strength, suggesting that astronauts on long voyages must be protected from debilitating effects of zero gravity ... The young space rats experienced a bone strength loss of up to 45 percent and a muscle tissue loss of up to 40 percent ... older rats ... suffered bone and muscle strength losses of about 15 percent ... Soviet space scientists reported a similar amount of muscle and bone loss in rats that were in space for more than 20 days ...

Selections from books

***Order Out of Chaos*, by Ilya Prigogine and Isabelle Stengers**

Equilibrium thermodynamics provides a satisfactory explanation for a vast number of physicochemical phenomena. Yet it may be asked whether the concept of equilibrium structures encompasses the different structures we encounter in nature. Obviously the answer is no.

Equilibrium structures can be seen as the results of statistical compensation for the activity of microscopic elements (molecules, atoms). By definition they are inert at the global level ... Once they have been formed they may be isolated and maintained indefinitely without further interaction with their environment. When we examine a biological cell or a city, however, the situation is quite different: not only are these systems open, but also they exist only because they are open. They feed on the flux of matter and energy coming to them from the outside world. We can isolate a crystal, but cities and cells die when cut off from their environment. They form an integral part of the world from which they can draw sustenance, and they cannot be separated from the fluxes that they incessantly transform.

Selections from books

(continued)

***Looking Glass Universe*, by Jon P. Briggs and F. David Peat**

Prigogine called far-from-equilibrium forms like the vortex, 'dissipative structures.' The name comes from the fact that to keep their shape these structures must constantly dissipate entropy so it won't build up inside the entity and 'kill' it with equilibrium ... [These dissipative structures] can survive only by remaining open to a flowing matter and energy exchange with the environment ... The structure is stabilized by its flowing. It is stable but only relatively stable—relative to the constant energy flow required to maintain its shape. Its very stability is also paradoxically an instability because of its total dependence on its environment. The dissipative structure is autonomous (separate) but only relatively separate. It is a flow within a flow.

Selection from books

(continued)

***The War of the Flea* by Robert Taber**

Almost all modern governments are highly conscious of what journalism calls 'world opinion.' For sound reasons, mostly of an economic nature, they cannot afford to be condemned in the United Nations, they do not like to be visited by Human Rights Commissions or Freedom of the Press Committees; their need of foreign investment, foreign loans, foreign markets, satisfactory trade relationships, and so on, requires that they be members in more or less good standing of a larger community of interests. Often, too, they are members of military alliances. Consequently, they must maintain some appearance of stability, in order to assure the other members of the community or of the alliance that contracts will continue to be honored, that treaties will be upheld, that loans will be repaid with interest, that investments will continue to produce profits and be safe.

Protracted internal war threatens all of this ... no ally wishes to treat with a government that is on the point of eviction.

It follows, that it must be the business of the guerrilla, and of his clandestine political organization in the cities, to destroy the stable image of the government, and so to deny its credits, to dry up its source of revenue, and to create dissension within the frightened owning classes, within the government bureaucracy (whose payrolls will be pinched), and within the military itself. Isolation, military and political, is the great enemy of guerrilla movements. It is the task of the urban organization to prevent this isolation, to provide diversions and provocations when needed, to maintain contact, to keep the world aware of a revolution in progress even when there is no progress to report.

Selection from books

(continued)

Social Order and The Theory of Strategy, by Alexander Atkinson

Moral fibre is “the great dam that denies the flood of social relations their natural route of decline towards violence and anarchy” ... In this sense, “moral order at the center of social life literally saves society from itself.”

“Strategists must grasp this fact that social order is, at once, a moral order ... If the moral order on which rests a fabric of social and power relation is compromised, then the fabric (of social order) it upholds goes with it.”

In other words, “the one great hurdle in the strategic combination (moral and social order) is the moral order. If this remains untouched the formation of new social relations and social ranking in status and power either never gets off the ground or faces the perennial spectre of backsliding towards the moral attraction of established social and power relations.”

The strategic imperative, then become one of trying “to achieve relative security of social resources by subverting and reweaving those of the opponent into the fabric of one’s own social order.”

Selection from books

(continued)

***Beyond Culture*, by Edward T. Hall**

Everything man is and does is modified by learning and is therefore malleable. But once learned, these behavior patterns, these habitual responses, these ways of interacting gradually sink below the surface of the mind and, like the admiral of a submerged submarine fleet, control from the depths. The hidden controls are usually experienced as though they were innate simply because they are not only ubiquitous but habitual as well.

... The only time one is aware of the control system is when things don't follow the hidden program. This is most frequent in intercultural encounters. Therefore, the great gift that the members of the human race have for each other is not exotic experiences but an opportunity to achieve awareness of the structure of their own system, which can be accomplished only by interacting with others who do not share that system ...

Selections from an unpublished essay

“Destruction and Creation”, by Yours Truly

According to Gödel’s Incompleteness Theorems, Heisenberg’s Uncertainty Principle, and the Second Law of Thermodynamics one cannot determine the character or nature of a system within itself. Moreover, attempts to do so lead to confusion and disorder.

Selection from a speech

“A Model of Soviet Mentality”, by Dmitry Mikheyev

Interaction between the individual and his environment starts with his perception of himself as a separate entity and the environment as everything outside of self. He learns his physical limits and desires, and how to fulfill them through interaction with the physical and social environment ... I maintain that the way the individual perceives the environment is crucial for his orientation and interaction with it.

Man's orientation will involve perceptions of self as both a physical and a psychological entity, as well as an understanding of the environment and of the possibilities for achieving his goals (FROMM, 1947). Society, meanwhile, has goals of its own—preservation of its physical integrity and spiritual identity. Pursuing these goals involves mobilizing and organizing its inner resources and interaction with the outside environment of other societies and nations ... An individual becomes a member of the society when he learns to act within its limits in a way that is beneficial to it.

Some favorite selections

Old Fable

- But sir, the emperor is naked, he has no clothes.

Sun Tzu

- Know your enemy and know yourself; in one hundred battles you will never be in peril.
- Seize that which your adversary holds dear or values most highly; then he will conform to your desires.

Jomini

- The great art, then, of properly directing lines of operations, is so to establish them in reference to the bases and to the marches of the army as to seize the communications of the enemy without imperiling one's own, and is the most important and most difficult problem in strategy.

Leadership

- The art of inspiring people to enthusiastically take action toward the achievement of uncommon goals.

? Raises question ?

Remembering that we are trying to see how the preceding selections are related to one another, where do we go next?

Condensation

to

essential elements

Compression

- Physical as well as electrical and chemical connections in the brain are shaped by interacting with the environment. Point: Without these interactions we do not have the mental wherewithal to deal or cope with that environment.
- Gödel's Incompleteness Theorems, Heisenberg's Uncertainty Principle, and the Second Law of Thermodynamics, all taken together, show that we cannot determine the character or nature of a system within itself. Moreover, attempts to do so lead to confusion and disorder—mental as well as physical. Point: We need an external environment, or outside world, to define ourselves and maintain organic integrity, otherwise we experience dissolution/disintegration—i.e., we come unglued.
- Moral fibre or moral order is the glue that holds society together and makes social direction and interaction possible. Point: Without this glue social order pulls apart towards anarchy and chaos leaving no possibility for social direction and interaction.
- Living systems are open systems; closed systems are non-living systems. Point: If we don't communicate with outside world—to gain information for knowledge and understanding as well as matter and energy for sustenance—we die out to become a non-discerning and uninteresting part of that world.

! Simply stated !

As human beings, we cannot exist without an external or surrounding environment from which we can draw sustenance, nourishment, or support.

In other words

Interaction permits vitality and growth while **isolation** leads to decay and disintegration.

Such a simple statement reveals that:

The theme associated
with
D & C, P O C, C & C
is one of
interaction and isolation

- “Organic Design for Command and Control” (C&C) emphasizes interaction.
- “Patterns of Conflict” (POC) emphasize isolation.
- “Destruction and Creation” (D&C) is balanced between interaction and isolation.

Keeping track of all these ideas

Let's move on and place them in a—

Strategic perspective

Now we can see by going to the beginning

The strategic game
is one of
interaction and isolation

A game in which we must be able to diminish adversary's ability to communicate or interact with his environment while sustaining or improving ours.

? Raises question ?
How do we do this?

Three ways come to mind

- Moral
- Mental
- Physical

? Why should we use these ?

- **Physical**

represents the world of matter-energy-information all of us are a part of, live in, and feed upon.

- **Mental**

represents the emotional/intellectual activity we generate to adjust to, or cope with, that physical world.

- **Moral**

represents the cultural codes of conduct or standards of behavior that constrain, as well as sustain and focus, our emotional/intellectual responses.

Upon folding these ideas into our interactions/isolation theme we can say:

- **Physical isolation**

occurs when we fail to gain support in the form of matter-energy—information from others outside ourselves.

- **Mental isolation**

occurs when we fail to discern, perceive, or make sense out of what's going on around ourselves.

- **Moral isolation**

occurs when we fail to abide by codes of conduct or standards of behavior in a manner deemed acceptable or essential by others outside ourselves.

While in opposite fashion we can say:

- **Physical interaction**

occurs when we freely exchange matter-energy—information with others outside ourselves.

- **Mental interaction**

occurs when we generate images or impressions that match-up with the events or happenings that unfold around ourselves.

- **Moral interaction**

occurs when we live by the codes of conduct or standards of behavior that we profess, and others expect us, to uphold.

! Fine !

But how do we play to this theme and exploit these ideas?

Hints

- Recall how we mentally constructed a snowmobile.
- Remember how we looked at ideas in mathematical logic, physics, thermodynamics, biology, psychology, anthropology, and conflict to surface a central theme.
- Remember our whole approach has been one of pulling things apart and putting them back together until something new and different is created.

illuminating example

? **What does the Second Law of Thermodynamics say** ?

All natural processes generate entropy.

? **What did Heisenberg say** ?

One cannot simultaneously fix or determine precisely the momentum and position of a particle.

? **What did Gödel say** ?

One cannot determine the consistency of a system within itself.

Illuminating example

(continued)

Point

As they appear, these statements and the ideas they embody seem unrelated to one another.

? Raises Question ?

Can these statements be related to one another; and, if so, how?

in other words

Taken together, what do Gödel, Heisenberg, and the Second Law of Thermodynamics say?

Illuminating example

(continued)

Message

One cannot determine the character or nature of a system within itself. Moreover, attempts to do so lead to confusion and disorder.

Keeping this statement in mind,

? Let's ask another question ?

What do the tests of the YF-16 and YF-17 say?

Illuminating example

(continued)

Message

The ability to shift or transition from one maneuver to another more rapidly than an adversary enables one to win in air-to-air combat.

Now

? What do we have ?

A statement drawn from the ideas of Gödel, Heisenberg, and the Second Law of Thermodynamics (First Message)

as well as

A statement drawn from the tests of YF-16 and YF-17 (Second Message).

Illuminating example

(continued)

Point

Once again, it appears that these two messages seem unrelated to one another.

? Raises Question ?

Can these statements be related to one another; and, if so, how?

in other words

Taken altogether, what do Gödel, Heisenberg, the Second Law of Thermodynamics, and the tests of the YF-16/YF-17 say?

illuminating example (continued)

Overall Message

- The ability to operate at a faster tempo or rhythm than an adversary enables one to fold adversary back inside himself so that he can neither appreciate nor keep-up with what's going on. He will become disoriented or confused;

which suggests that

- Unless such menacing pressure is relieved, adversary will experience various combinations of uncertainty, doubt, confusion, self-deception, indecision, fear, panic, discouragement, despair, etc., which will further:

Disorient or twist his mental images/impressions of what's happening;

thereby

Disrupt his mental/physical maneuvers for dealing with such a menace;

thereby

Overload his mental/physical capacity to adapt or endure;

thereby

Collapse his ability to carry on.

? What's the point of all this ?

- We can't just look at our own personal experiences or use the same mental recipes over and over again; we've got to look at other disciplines and activities and relate or connect them to what we know from our experiences and the strategic world we live in.

if we can do this

- We will be able to surface new repertoires and (hopefully) develop a *Fingerspitzengefühl* for folding our adversaries back inside themselves, morally-mentally-physically—so that they can neither appreciate nor cope with what's happening—without suffering the same fate ourselves.

Which carries us to the ? question ?

- How do we fold adversaries back inside themselves, morally-mentally-physically ... without suffering the same fate ourselves?

or put another way

- How do we **physically isolate** our adversaries yet **interact** with others outside ourselves?
- How do we **mentally isolate** our adversaries yet keep in touch hence **interact**, with unfolding events?
- How do we **morally isolate** our adversaries yet maintain the trust/confidence of others and thereby **interact** with them?

Illumination

- **Physically** we can **isolate** adversaries by severing their communications with outside world as well as by severing their internal communications to one another. We can accomplish this by cutting them off from their allies and the uncommitted via diplomatic, psychological, and other efforts. To cut them off from one another we should penetrate their system by being unpredictable, otherwise they can counter our efforts.
- **Mentally** we can **isolate** our adversaries by presenting them with ambiguous, deceptive, or novel situations, as well as by operating at a tempo or rhythm they can neither make out nor keep up with. Operating inside their O-O-D-A loops will accomplish just this by disorienting or twisting their mental images so that they can neither appreciate nor cope with what's really going on.
- **Morally** adversaries **isolate** themselves when they visibly improve their well being to the detriment of others (i.e. their allies, the uncommitted, etc.) by violating codes of conduct or behavior patterns that they profess to uphold or others expect them to uphold.

Expected payoff

Disintegration and collapse, unless adversaries change their behavior patterns to conform to what is deemed acceptable by others outside themselves.

Illumination

(continued)

- **Physically** we **interact** by opening-up and maintaining many channels of communication with the outside world, hence with others out there, that we depend upon for sustenance, nourishment, or support.
- **Mentally** we **interact** by selecting information from a variety of sources or channels in order to generate mental images or impressions that match-up with the world of events or happenings that we are trying to understand and cope with.
- **Morally** we **interact** with others by avoiding mismatches between what we say we are, what we are, and the world we have to deal with, as well as by abiding by those other cultural codes or standards that we are expected to uphold.

Expected payoff

Vitality and growth, with the opportunity to shape and adapt to unfolding events thereby influence the ideas and actions of others.

Pulling all this together we have in a nutshell

The art of success

- Shape or influence the moral-mental-physical atmosphere that we are a part of, live in, and feed upon so that we not only magnify our inner spirit and strength, but also influence potential adversaries and current adversaries as well as the uncommitted so that they are drawn toward our philosophy and are empathetic toward our success;

yet be able to

- Morally-mentally-physically isolate our adversaries from their allies and outside support as well as isolate them from one another, in order to: magnify their internal friction, produce paralysis, bring about their collapse; and/or bring about a change in their political/economic/social philosophy so that they can no longer inhibit our vitality and growth.

Implementation

an

example

**A
moral design
for
grand strategy**

Name-of-the-game

- Use moral leverage to amplify our spirit and strength as well as expose the flaws of competing or adversary systems, all the while influencing the uncommitted, potential adversaries and current adversaries so that they are drawn toward our philosophy and empathetic toward our success;

or put another way

- Preserve or build-up our moral authority while compromising that of our adversaries' in order to pump-up our resolve, drain-away adversaries' resolve, and attract them as well as others to our cause and way of life.

? Raises Question ?

- How do we evolve this moral leverage to realize the benefits cited above?

Moral leverage

With respect to ourselves we must:

- Surface as well as find ways to overcome or eliminate those blemishes, flaws, or contradictions that generate mistrust and discord so that these negative qualities neither alienate us from one another nor set us against one another, thereby destroy our internal harmony, paralyze us, and make it difficult to cope with an uncertain, ever-changing world at large.

In opposite fashion we must:

- Emphasize those cultural traditions, previous experiences, and unfolding events that build-up harmony and trust, thereby create those implicit bonds that permit us as individuals and as a society, or as an organic whole, to shape as well as adapt to the course of events in the world.

Moral leverage

(continued)

With respect to our adversaries we should:

- Reveal those harsh statements that adversaries make about us—particularly those that denigrate our culture, our achievements, our fitness to exist, etc.—as basis to show that our survival and place in the scheme of things is not necessarily a birthright, but is always at risk.

Likewise we should:

- Reveal those mismatches in terms of what adversaries profess to be, what they are, and the world they have to deal with in order to surface to the world, to their citizens, and to ourselves the ineptness and corruption as well as the sub-rosa designs that they have upon their citizens, ourselves, and the world at large.

Moreover we should:

- Acquaint adversaries with our philosophy and way of life to show them that such destructive behavior works against, and is not in accord with, our (or any) social values based upon the dignity and needs of the individual as well as the security and well-being of society as a whole.

Moral leverage

(continued)

With respect to others (i.e., the uncommitted or potential adversaries) we should:

- Respect their culture and achievements, show them we bear them no harm and help them adjust to an unfolding world, as well as provide additional benefits and more favorable treatment for those who support our philosophy and way of doing things;

yet

- Demonstrate that we neither tolerate nor support those ideas and interactions that undermine or work against our culture and our philosophy hence our interests and fitness to cope with a changing world.

Now going back to the beginning

What is strategy?

A mental tapestry of changing intentions for harmonizing and focusing our efforts as a basis for realizing some aim or purpose in an unfolding and often unforeseen world of many bewildering events and many contending interests.

What is the aim or purpose of strategy?

To improve our ability to shape and adapt to unfolding circumstances, so that we (as individuals or as groups or as a culture or as a nation-state) can survive on our own terms.

What is the central theme and what are the key ideas that underlie strategy?

The central theme is one of interaction/isolation while the key ideas are the moral-mental-physical means toward realizing this interaction/isolation.

How do we play to this theme and activate these ideas?

By an instinctive see-saw of analysis and synthesis across a variety of domains, or across competing/independent channels of information, in order to spontaneously generate new mental images or impressions that match-up with an unfolding world of uncertainty and change.

Definitions

- **Evil**

occurs when individuals or groups embrace codes of conduct or standards of behavior for their own personal well being and social approval, yet violate those very same codes or standards to undermine the personal well being and social approval of others.

- **Corruption**

occurs when individuals or groups, for their own benefit, violate codes of conduct or standards of behavior that they profess, or are expected, to uphold.

About this edition

This edition of “Strategic Game” is our attempt to recreate the last version of the briefing actually presented by the late Col John Boyd, USAF (1927 – 1997). The last printed version known to exist carries the date June 1987. We have used that as the starting point, and then modified the text based on changes we received from Col Boyd, which continued until around 1991. By that time, he had moved on to other activities, such as “Conceptual Spiral,” his advice to then-Secretary of Defense Dick Cheney during the First Gulf War, and his interest in other forms of conflict, including business.

The original 1987 edition, with pen-and-ink changes as dictated by Col Boyd, is available in PDF format at <http://www.d-n-i.net>. The primary change, which dates from July 1989, is in the definition of “strategy” on p. 58.

About the Editors

Chuck Spinney was a colleague of Boyd’s both in the Air Force and in the Office of the Secretary of Defense, where he participated in every edition of “Strategic Game.” Chuck is the author of *Defense Facts of Life* and numerous monographs and op-eds. His commentaries on defense issues appear from time to time and are archived at <http://www.d-n-i.net>.

Chet Richards worked with Col Boyd on his first paper, “Destruction and Creation,” on various editions of “Patterns of Conflict,” and near the end of Boyd’s life, on business applications. He is a retired colonel in the Air Force Reserve, and recently finished a book, *Certain to Win*, that applies Boyd’s concepts to business.

Ginger Richards is co-owner and president of Kettle Creek Corporation, which owns Defense and the National Interest. She designed and maintains that site as well as its sister, <http://www.belisarius.com>, which is more oriented towards business.