

TRAPS OF TRADITIONAL LOGIC & DIALECTICS: WHAT THEY ARE AND HOW TO AVOID THEM

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Introduction

We all try to avoid the common fallacies of deductive reasoning that teachers of thinking have helped us to identify. But recent research into the foundations of thinking suggests that some non-deductive fallacies may be more common, more insidious, and easier to fall into. And they result from built-in limitations to everyday thinking patterns about the phenomena change and stability. But since they are based on systematic distortions built into largely preconscious thought processes, they have, historically, been difficult to identify in a routine manner. Recently, with increasing sophistication in understanding our thought processes, examples of these traps are easier to notice, if only because we are more tuned to the casual errors in elaborating an argument. The contribution of this paper is to collect and categorize these traps and show how they are related directly to and, indeed, are somehow generated by the axioms of traditional and dialectical logic.

What are traps?

The underpinnings of our thinking about change and stability, identity and transformation, stasis and morphogenesis are, by the time we are adults, so unconscious and so natural that we rarely pay attention to them. Change and identity are non problems. But logic, which does serve us well in many, if not most, situations we face in the average day, often becomes inadequate when faced with complex, high interactive systems and intricate policy matters. The term trap, in this article, refers to the specific ways that the organization of our thinking about change and identity leads us astray (or into predictable error). We can learn something about the nature of traps by examining the source of this metaphor. These counter-productive varieties of thinking which determine our actions are rather like the traps on a golf course. In golf we land in a trap due to a combination of faulty calculation (of wind and lay of the land), lack of skill, and faulty action (not following through, choosing the wrong club). But in golf we know immediately when we have landed in a trap when we can't find the ball on the fairway. In this latter respect, traps of reasoning are often different. We may suspect that something has gone wrong, but often we're not sure why. In golf we know that we are going to waste strokes but that we'll eventually reach the green. Metaphorically, thus, traps are areas of thinking which we stumble into even though we have the best of intentions and skill and which we find it hard to extricate ourselves from. By knowing about the traps for thinking and recognizing which trap we have wandered into, we can often correct our thinking before we move from plan of action to action itself. Thus the description of traps can provide us with a set of tools that are at least partially corrective. In this paper I present descriptions of seven traditional logic traps and six dialectic traps. I illustrate each with examples from dynamic psychology and public policy issues.

PART 1 -- TRAPS OF TRADITIONAL LOGIC

The seven of traps that derive from traditional logic are:

The Forever Changeless Trap. In this trap we think of the current condition as being the same forever.

The Process-Event Trap. This trap leads us into the error of thinking in terms of object-like "events" where we would do better to think in terms of processes.

The Solve It by Redefining It Trap. This could be called the Definition Can Do It Trap in that it attempts to solve problems by redefinition alone.

The Independent Self Trap. In this trap we separate organism from environment, ourselves from our interdependence with others.

The Isolated Problem Trap. In the grip of this trap we regard problems as unconnected to their wider contexts.

The Single Effect Trap. In this trap we think that we can cause a single effect with no "side-effects."

The Exclusive Alternatives Trap. Traditional logic tends to make us think in terms of either-or analysis. Many situations demand that we juggle more than two alternatives.

The reader will recall that traditional logic comprises those general rules of thinking derived from Aristotle's *Organon*. (see note 1) It concerns itself only with identity and non-contradiction. These traps result from the unconscious acceptance of the point of view implicit in the axioms of traditional logic, which are

1. **The axiom of identity:** A thing is always equal to or identical to itself. Everything is what it is. A is A.
2. **The axiom of contradiction:** A thing can not be both itself and something else. A is not not-A.
3. **The axiom of the excluded middle:** Each thing must be one of two mutually exclusive things. A is not both A and not-A. Each axiom generates separate traps (Johnson 1984)#

Axiom	Trap
Identity (A is A)	Forever Changeless Trap Process-Event Trap Solve It by Redefining It Trap
Contradiction (A is not not A)	Independent Self Trap Isolated Problem Trap
Exclusion (A is not both A and not A)	Single Effect Trap Exclusive Alternatives Trap

What the traps have in common is that they all ignore that concepts, persons, and things are processes which change, however slowly, and are interrelated with each other. Traditional logic deals with space; it does not deal with time, change, and interrelatedness (that itself is continuously changing)

The Forever Changeless Trap

When we think, "This is how it will always be," we risk falling into the Forever Changeless Trap. For instance, we think, I will always have trouble with math. I dislike it and don't understand it very well. I can't imagine myself any different. Or, we think about a roommate, housemate, or spouse, she (or he) is just sloppy. They will always be that way. There's no way they'll ever change. But people do change. Maybe not enough to please us and maybe not as fast as we'd like but change is inevitable. This being the case, there is a point in discussing our dissatisfactions, rather than feeling such discussion (either at the personal level or in politics) can have no positive results.

Our deeply unconscious traditional logic fails to consider time. It treats the continuously changing world, both out there and inside ourselves, as frozen. It is as it is right now. It enables us to extract or construct out of the continuously changing world, individual things, concepts, and identities. It is part of the powerful package of mental processes that enable us to identify things. When buried in our preconscious thinking apparatus, the first axiom ($A = A$) attaches the implication "forever" to any thought. There is no time in an identity. Although traditional logic says nothing about time, we frequently fall into the trap of thinking,

The Forever Changeless Trap appears in our thinking about policy as well. For many years, I, along with large numbers of other Americans, thought of the Eastern Bloc countries as all uniformly antagonistic to the West and loyal to a single brand of economic organization, the centrally planned Soviet type. The events in Poland of 1981-83 associated with the Solidarity movement began to change that view. And the enormous changes in China from 1978 to the present have also undermined this Forever Changeless point of view. When I visited China in 1983, observers were pointing out that up to 40 per cent of the Chinese economy had been switched over to the free market in the past four years. By 1987 it is reported to be upwards of 70% free market. Few of us had updated our concepts to incorporate these changes.

Significant dangers, of course, attach to a Forever Changeless attitude in public policy. The world is continually undergoing subtle and not-so-subtle realignment. Consider the effect of the discovery of oil and then the revaluation of oil on the "forever changeless" world of the Middle East. After the Arab oil embargo of 1974, the Western world realized it had become dangerously dependent upon the Middle East for oil. But more recently (1984), after conservation efforts and high prices, the West had shifted its energy sources and was less dependent on oil from the Middle East. Yet during each of the policy debates one heard Forever Changeless arguments. Or consider the Director of Harvard's Center for Science and International Relations, Joseph S. Nye, Jr. talking about deterrence, the very centerpiece of strategic thinking. He says "Generally speaking,

nuclear strategists have ignored the question of the long-term future of deterrence. The rational models of deterrence theory tend to be static and ahistorical." (Nye, 1987) The very tendency of people to think in terms of the Forever Changeless Trap is a strong conservative influence in keeping things the way they are. It is a major form of the self-fulfilling prophecy.

The Process-Event Trap

The Process-Event Trap is an error in thinking which treats on-going processes as if they were events, over and done with. While "events" usually involve more consideration of change than a "thing," they differ from the "processes" of which they are a part. When we think "event" we are usually thinking of a time slice through a process or some short, limited "chunk" of time. This distortion is sometimes called "nominalization" in the sense of making a noun out of a verb. As long as we realize that thinking this way is a shorthand and that Korzybski warned us "the map is not the territory," we can avoid the Process-Event Trap. The Trap appears to derive directly from the traditional logic axiom that stops time and treats all thoughts as objects. A can equal A only if they are well-defined things or events with definite boundaries. Bandler and Grinder (1975) point out that therapists frequently notice the nominalization process in the thinking processes of their clients. For example, a client will say, "I feel awful about my decision to live in the city." Bandler and Grinder point out that the event word "decision" represents in the client's model of the world an on-going process of deciding to stay in the city. They note that representing experience of process as events "is impoverishing in the sense that clients lose control of on-going processes by representing them as events." They add "The task of the therapist is to help the client see that what he has represented in his model as a closed, finished event is an on-going process which may be influenced by him."

They point out that the therapist can achieve this by asking the client, "What is it that stops you from reconsidering your decision?" or "You have made your decision and there is nothing that you can imagine that would change your decision?" Bandler and Grinder give two helpful ways to spot the Process-Event Trap in personal situations:

1. The on-going (blank) test. Nominalizations such as "rage, refusal, hope" will fit into the phrase "the on-going_____." Thus, it will sound all right to the native speaker of English to say "my on-going rage." But object nouns will not fit into such a sentence-- "My on-going chair" sounds odd and nonsensical.
2. The parallel sentences test. Bandler and Grinder suggest creating parallel sentences to those which use Process-Event Trap words with object words.
"I have a lot of rage." "I have a lot of asparagus plants." "My refusal is final." "My garage is final." "I need a lot of hope." "I need a lot of chairs."

Public policy discussions abound with nominalizations. Nominalization also stands behind our acceptance of the meaning of collective nouns at face value. Ideologies thrive on the Process-Event Trap. We create a "thing" called "the Russian people" and say that "it" wants something or does not want something. "The Arabs" are another example of a many-headed imaginary monster. It can be useful to talk about "the American people" but it can also cover up a great deal of superficial generalizations which can lead to grave mistakes of judgment. It is detrimental, a trap, if it makes us overlook the variety and the

dynamic aspect of the situation. Nominalization can interfere with our perception of process.

The Solve It By Redefining It Trap

Human beings are subject to various forms of "word magic." One such form is the Solve It by Redefining It Trap, in which people act as if they can make certain problems go away by reclassifying them into another category. Our unconscious traditional logic programming and the ease and speed with which the mind moves symbols around makes redefining and reclassifying very attractive. Valuable as this capability is, it does not necessarily change the condition.

When a couple is romantically involved for a long period of time many parts of their lives become intertwined. Frequently they try to solve problems that come up as a result of this process by redefining them:

- We're not married, so we don't have to think about that.
- We're not a couple--we're just friends--so that's not an issue for us.

Sometimes redefining a problem or the elements in a problem will prove helpful. If we aren't a couple then certain of our expectations about each other are pointless; let's see if we can put them aside. The difficulties begin when we try to use the new definition and it won't work. In most cases the couple who agree that they are "just friends" are sweeping their problem under the metaphorical rug. The problem just isn't going to go away that easily because it is interconnected with so many elements in their ongoing changing lives.

Many times in international relations non-recognition of a country or group of people is used in an attempt to solve a problem. The Chinese have always regarded Taiwan as part of the Chinese People's Republic. Since this is so, for long periods, they would not even permit discussion of the change of status of Taiwan. Solving problems in this region is awkward because, by the Chinese definition, the problem does not exist. Most "non-negotiable demands" are attempts to solve a problem by definition. One side "solves" what is a major problem for the other side by "defining it out of existence." Since we won't discuss X and since we have told you that if you bring it up, we'll walk out on you, X does not exist. It is not a problem.

We, of course, can make useful definitions. We know that definitions are useful because they work. They further our work without too many undesirable "side-effects" arising in the process. But we have to be careful that we do not "define something out of existence" (Solve It by Definition) or "define something into physical existence" (Nominalization). We have to remind ourselves that definitions are never totally binding. Meanings erode over time. Words have temporary validity. Meanings--the relations of concepts to words--require periodic checks. ("How is our friendship faring?" "Is Patagonia still an ally?" "Does saying someone is a liberal mean what it did last year?") Failure to realize that definitions are made by us and other fallible people for a limited time will lead us into the Forever Changeless Trap.

The Independent Self Trap

If I have fallen into the Independent Self Trap I will imagine that I am totally separate and distinct from other people. I will have forgotten my interconnectedness and interdependence with others. Traditional logic programming tells us a thing can not be itself and something else (A is not not A). The axiom of contradiction emphasizes difference. This trap determines the kind of action that a person or organization takes when it fails to consider the people who will be deeply affected by it.

In relationships, sometimes one partner will act as if his or her actions had no effect on the other partner. For instance, one partner will spend money on something that prevents the family from buying things it needs. Or one or more of the partners will spend so much time in advancing their careers that relationships suffer in the family as a whole. Because we think of ourselves only as independent selves, one sometimes we do nothing, i.e., do not call or write a loved or friend for a few days when they are expecting it, and find out from their reactions that we are not as independent as we had thought.

Many corporate decisions fail to take a stakeholder analysis into account. Ackoff (1981) defines stakeholders as "all those inside or outside an organization who are directly affected by what it does. Therefore, they include all those whom managers should take into account, including managers themselves. This perspective thus describes the organization by its relationships with its stakeholders:

"1. An exchange of money for work with employees. 2. An exchange of money for goods and services with suppliers. 3. An exchange of goods and services for money with customers. 4. An exchange of money paid later for money received now with investors and lenders. 5. An exchange of money paid now for money received later with debtors. 6. An exchange of money for goods, services, and regulation with government (e.g., water, waste collection and disposal, and fire and police protection)."

This list, of course, only begins to describe the rich texture of the relationships found in an organization. Often decisions are made in corporations without consideration of one or more of the stakeholder interests.

Political leaders who fail to touch base with their allies before making important decisions about vital issues may have fallen into thinking that their country could operate alone, an independent self. While this is possible, alliances suffer from lack of trust, and more subtle and coordinated programs such as major economic policies are more difficult to put into effect. One possibility for avoiding this trap in analysis is to sketch out a list of parties likely to be affected and their likely points of view before approaching the problem.

The Isolated Problem Trap

The Isolated Problem Trap designates a tendency to regard a problem as unconnected to its wider contexts. It is another result of misapplying the axiom of contradiction. If a thing is only itself, then it is not connected in any very important sense to wider contexts. Put in a positive way, appropriate analysis includes the investigation of the interaction of

the system you are studying or the action you are proposing with the larger systems of which it is a component. We, of course, need to recognize that to analyze any problem or to come up with any plan for action, we need to segregate it for the purpose of analysis from everything irrelevant to it. The limitations of the human brain-mind require this. But just as we must isolate issues to be able to work on them, we must as surely reintegrate them with their related supra-systems in order for our analysis to have any degree of effectiveness.

Early psychotherapists regularly treated children and adolescents apart from their families in individual therapy. Results were frequently poor, as the children, when returned to their families, began to exhibit their previous neurotic patterns. After a considerable reformulation of thinking about what was the unit to be treated, many therapists began to treat the entire family (Selvini Palazzoli et al. 1978). Thinking in terms of the individual patient as an isolated problem was not as effective as treating the entire family, including the individual with the identified symptoms or problems.

In the field of nuclear strategy, the current official policy, strategy known as the countervailing theory, suggests that the West needs to provide successful conventional defense to protect against conventional attack. It maintains that intermediate range nuclear weapons are needed to deter the other side from using tactical nuclear forces. And of course strategic weapons would deter the use of strategic weapons. This kind of compartmentalized thinking tends to lead one to suppose that despite the confusion, incoherence, and stress of any contemporary battlefield or crisis situation, that weapons systems can be neatly isolated and that the forces intended for each escalating level of attack can be easily kept separate. But examining the situation (Jervis 1984), rather than simply accepting the theory, suggests quite the contrary. The command, communications, control, and intelligence systems (C3I) are the same for all three types of combat: strategic nuclear, tactical nuclear, and conventional. The weapons systems are frequently usable in all situations. Those who fall into the Isolated Problem Trap think otherwise, but there is little likelihood that events can remain isolated as their analyses foresee.

How does this partial blindness or tunnel vision become a regular feature of so much of our thinking? It would appear that we often become so possessed by the importance of our short-term goals that we forget our long-range goals and the broader context in which we are working. Gregory Bateson (1972) has suggested that it is often "considerations of purpose" which limit "The specific nature of this distortion is such that the cybernetic nature of self and the world tends to be imperceptible to consciousness. . . The argument of purpose tends to take the form 'D is desirable; B leads to C; C leads to D; so D can be achieved by way of B and C.' But, if the total mind and the outer world do not, in general, have this lineal structure, then forcing this structure upon them, we become blind to the cybernetic circularities of the self and the external world. Our conscious sampling of data will not disclose whole circuits but only arcs of circuits, cut off from their matrix by our selective attention. Specifically, the attempt to achieve a change in a given variable, located either in self or environment, is likely to be undertaken without comprehension of the homeostatic network surrounding that variable."

The Single Effect Trap

The Single Effect Trap is the assumption that for every single cause there is one and only one effect. This trap results from the misapplication of the axiom of the excluded middle that postulates that something must be one of two mutually exclusive things. This axiom suggests that we should understand the world one factor at a time, no matter how interconnected it is. Believing in a single effect for each cause will lead us to ignore side-effects. Side-effects are usually described as all of those effects produced by an action that are not as important to the observer as the one result the planner wanted.

The ministers of the OPEC nations appear to have believed that they could raise oil prices in the 1970s without any major effect on the world economy. They must have reasoned that raising the price dramatically would raise their revenues dramatically. But this oil price rise was a primary cause of a worldwide recession. The recession eventually forced major cutbacks in the production of oil and a drop in revenue. In international finance you can rarely do something that has only one effect.

The ecologist Garrett Hardin (1972) put this trap in thinking succinctly: "We can never do merely one thing. This simple sentence imperfectly mirrors the one big thing ecologists know--the idea of a system." And he describes the reasoning behind this error: "It is quite understandable if the mind of a well-to-do and well-meaning person, after a visit to the slums, generates this implicit argument:

1. Poverty is found in slums
2. Therefore, let us destroy the slums, and thus:
3. We will destroy poverty. Some such implicit argument underlies the Housing Act of 1949."

Hardin uses the term pesticide to illustrate this trap in ecology. "Definition: 'Pesticide'--something that kills pests... Implicit in the definition is the black-and-white view that organisms can be divided into pests and non-pests, and that pests are wholly and always undesirable. Likewise, since nothing else is mentioned, the word implies that a pesticide kills nothing but pests...

"The subject-predicate structure of our language makes it all too easy to assume that the world is composed only of (one cause)--(one effect) logical pairings. But it isn't. The world is a network, the 'causes' of any effect are multiple, and the effects of any 'cause' are likewise multiple (and seldom predictable). Language, perfected no doubt a hundred thousand years before ecology was discovered, does not routinely mirror the poet's ecological truth that we cannot stir a flower without troubling a star.... Language is so linear, so sequential."

Hardin suggests calling "pesticides" something like "avicides," since it kills birds or perhaps "biocides," because they generally have widespread effects. He believes that a word should be "guilty until proven innocent." Because we should be suspicious of each new biological agent, we should use language to help us keep our guards up.

Problems arise when side-effects are ignored or worse, not investigated at all. Hardin succinctly describes the results of economic development policy in an African country: "'Side-effects' is most potent word magic. The Zambezi River in Africa was dammed, with World Bank financing, to create the 1700-square-mile Lake Kariba. The effect desired: electricity. The 'side-effects' produced: (1) destructive flooding of rich alluvial agricultural land above the dam; (2) uprooting of long-settled farmers from this land to be resettled on poorer hilly land that required farming practices with which they were not familiar; (3) impoverishment of these farmers and (4) the migration of many of them to city slums; (5) social disorder of uprooted, impoverished people; (6) creation of a new biotic zone along the lake shore that favored the multiplication of tsetse flies; (7) trypanosomiasis (sleeping sickness) among humans; and (8) over-all diminution of protein supply of the region." Harden points out that no one of these effects is more "side" than another. He suggests a new definition of "side effect" as "any effect we don't want, and the existence of which we will deny as long as we can."

He recommends comprehensive ecological studies of effects and says, "if a thorough ecological study is made beforehand it will not infrequently turn out that the total projected costs--of main project plus subsidiary projects required to minimize so-called side-effects--are greater than the realistically projected benefit. If the projected costs are greater than the projected benefits, rational men will abandon the project."

The Exclusive Alternatives Trap

A traditional logic point of view tends to lead us to formulate choices as between two mutually exclusive alternatives. In doing so we follow the axiom of the excluded middle: a thing is either itself or something else. When we formulate our problems as choices between only two alternatives in situations where a multi-valued formulation would be more appropriate, we fall into the Exclusive Alternatives Trap.

Sometimes when a couple is disputing where to go on vacation or how to spend discretionary income, they fall into the Exclusive Alternatives Trap. It leads them to think that the outcome must be the happiness of one or the other partner. Further dispute may lead the partners to feelings and formulations of the situation as "You stop doing that or I'll move out," another pair of exclusive alternatives.

The classic example of the Exclusive Alternatives Trap is that posed for late 19th century physicists by the particle and wave theories of light. Experiments showed conclusively that ultimate reality is composed of particles. Other experiments demonstrated persuasively that ultimate reality is made up of electromagnetic waves. Physical scientists now say they need not choose one or the other of these apparently incompatible descriptions, thus avoiding this trap.

In the 1970s in Northern Ireland, the polarization of political factions had become so fierce and absolute that to be on the side of "peace" was to have opted for one side or the other. In other words, the opposing forces kept forcing individuals and countries to choose one side or the other without permitting any middle ground. This had grave consequences, among them increasing the difficulty of extricating the two groups from

their increasingly bloody struggle. At one point I was told that the only group that was able to remain neutral was a group that said in effect, "We're not for either of you, we are not for peace or for war, we are for the children of Ireland." As long as they refused to discuss any issue other than children, they were able to maintain their neutrality. Interestingly, they were also able to act on occasion as go-betweens in other matters as well.

When we develop large, important distinctions such as "mind" and "body" and then spend much time trying to establish if a particular event or phenomenon belongs in one or the other category, and exactly what the relationship between the one and the other is, we have fallen into this trap. While often useful for certain purposes, such dualisms are prime examples of the Exclusive Alternatives Trap.

Summary

Many of these traps bear similarities to each other: when we are in their grip we fail to take time into consideration. We also fail to take into consideration the train of effects in the real world which time is responsible for. Further, when under their influence, we ignore relationships-- the interconnections which are every bit as real as "things." We trap ourselves in a conception of the present unconnected with other people and other processes. While the traditional logic point of view is important, because it permits us to form identities, and thus to organize our world meaningfully into components, it also contains the seeds of life-long difficulties. When we use traditional logic thoughtlessly we fall into the traps.

PART 2. DIALECTIC TRAPS

Dialectics is as necessary for our thinking as is traditional logic and with the same proviso, that we apply it correctly and accept its limitations. Dialectics is needed for critique and to add the time-dimension to our thinking. But the dialectic point of view also has the capacity to draw us into potential error. It contains powerful metaphors that often appear to control our thought in certain areas almost to the exclusion of other possibilities.

I outline six potential dialectic traps:

The More Is Better Trap. In this trap we assume that anything can be solved by application of more resources.

The Force Can Do It Trap. In the grips of this trap we think in terms only of forcing a solution on the situation.

The Conflicts Create Productive Change Trap. A direct implication of dialectical thought is the idea that you can create change by creating conflict and that conflict will produce beneficial results.

The Inevitable Antagonism Trap. In this trap we assume that there is inevitable conflict between persons, organisms, groups, nation-states.

The No Limits Trap. This trap assumes limitless resources and arenas for action.

The There's Got to Be a Winner Trap. This trap is the misapplication of the idea of a winner and loser to situations where it is not applicable.

These traps result from the unconscious acceptance of the point of view implicit in the axioms of dialectical logic, which are:

1. **The axiom of transformation Sufficient.** Changes in quantity may produce changes in quality.
2. **The axiom of interaction between opposites.** Opposing forces produce a transformation of the system which includes both of them.
3. **The axiom of negation of the negation.** The inevitable conflict between thesis and its antithesis produces something different from either of them, the synthesis.
- 4.

Each axiom generates traps (Johnson 1984)#

Axioms	Traps
Quantity into Quality	More is Better Trap Force Can Do It Trap
Interaction Between Opposites	Inevitable Antagonism Trap
Negation of the Negation	No Limits Trap There's Gotta Be A Winner Trap

All of the dialectic traps result from two unexamined assumptions.

1. **Absence of boundaries or limits.** Time, resources, size of arena for action appear to the dialectic-minded person as unbounded.
2. **Presence of conflict.** The dialectic-minded person assumes that there will be conflict, that it is necessary to produce change, and that therefore it is "good" in the long-range view.

These assumptions generate as the fallacies we call the dialectic traps.

The More Is Better Trap

Lovers who operate from a dialectical point of view will reason that, because loving contact feels good, more would be better, and best of all would be if "we could be together all of the time." The More Is (automatically) Better Trap assumes that the application of more resources will be beneficial in any situation.

More Is Better thinking has contributed to the current situation in the competition between the superpowers. More and more nuclear weapons were seen by each side as

producing better national security. As the recent discussions of the nuclear winter hypothesis (Sagan 1983) have pointed out, many scenarios involving a nuclear conflict may result in the destruction of a great part of the human species, and risk ecocatastrophe. Sagan says, "Traditional belief and childhood experience teach that more weapons buy more security. But since the advent of nuclear weapons and the acquisition of a capacity for overkill, nuclear weapons do not increase national security. I wish here to suggest that, beyond the climatic threshold, an increase in the number of strategic weapons leads to a pronounced decline in national (and global) security. National security is not a zero-sum game. Strategic insecurity of one adversary almost always means strategic insecurity for the other. Conventional pre-1945 wisdom, no matter how deeply felt, is not an adequate guide in an age of apocalyptic weapons." While the debate as to the best estimates on the effects of nuclear war is still underway, the illusion of More is Better still underpins much of the arguments of some of the debaters. By the early 1970s, scientists competing for National Science Foundation grants had increased the size of each proposal they wrote to the vicinity of 100 pages. Each one tried through size to impress the peer review panels of the importance of their ideas and the thoroughness of their knowledge of the field. It took more and more time to read and judge these proposals. And no scientist would risk writing a fifteen page proposal, for fear of its appearing skimpy and insufficiently thought out. But the NSF decided that this More Is Better process had gone too far and sometime in the mid-70s introduced a maximum length of 15 pages for proposals submitted to its panels.

The Force Can Do It Trap

In personal relationships people sometimes think that they will somehow force their affections on someone else; that their persistence and insistence will overcome the resistance of the other. Or that in a difference of opinion the other will back down. (Note: this usually occurs together with the erroneous formal logic assumption that there will be no other consequences, no side effects.) The Force Can Do It Trap is the assumption that we should immediately turn to the use of some form of power or strength to change a situation, other people, or ourselves. As we grow up, we find that exerting our strength on occasion will help us overcome a physical obstacle. We wrestle and push other little kids and they get out of our way. From these simple origins, we generalize a cluster of ways to "force" a solution on a situation.

International relations is the supreme arena where the Force Can Do It Trap is played out. Sovereign nation-states act on the basis of their perceived "vital national interests" with military forces either in direct combat or with threats of the use of force. When uninfluenced by other considerations, this Force Can Do It Trap often leads the country into unanticipated consequences that are often disastrous. Leaders fail to anticipate the opponent's will to endure. They fail to anticipate the inflationary effect of wars or military buildups on the economy. They sometimes fail to anticipate that a war will be unpopular with the populace upon whom they depend for support. Thus this attitude becomes a trap for those who only anticipate its most immediate favorable consequences. It is a dialectic trap that easily relies on the formal logic Single Effect Trap.

Nothing in this discussion should be construed to indicate that the author thinks that force should never be used. Force is an appropriate response, for example, in self-defense where no other alternatives are available. We must distinguish dialectical "force" from a more neutral understanding of what we are doing when we "add energy to a situation in the appropriate amount." For example, if you want to get your ideas across, you must speak up. You mobilize the necessary energy, no more and no less. You are not using force in the dialectical sense. Now suppose instead of simply speaking up, you were to shout down someone you viewed as your opponent. You are then using force in the dialectical sense.

The Conflicts Create Productive Change Trap

The Conflicts Create Productive Change Trap derives directly from dialectic assumptions. If you start from the assumption that all situations contain contradiction and conflict that drive or produce change, you then know that all you have to do is look into the situation and see if you can discover contradiction and conflict. If you can't, you stir up conflict in whatever way you can. Then sit back and wait for the change. In public policy this kind of thinking appears to have been behind the U.S. policy of "destabilizing" Chile. It was used by the U.S.S.R. in the 30s, stirring up trouble during the world depression in the expectation that revolutions would occur spontaneously. While this trap appears simple-minded, it is also at the basis of the terrorist's reasoning: Strike! Produce fear! Kill innocent people! The authorities will overreact and public opinion will swing over to our cause. Using terrorism, you don't need very much conflict to escalate the situation into a larger conflict. Unfortunately, it is only too true that starting a conflict will produce some change, but all too frequently it produces outcomes unpredicted by the instigators. The failure of confrontation to produce the desired and precise result is a major flaw in this line of reasoning.

"A good fight clears the air," folklore advises us. And sometimes an energetic confrontation is beneficial to a relationship. But it needs to have the benefit of those "rules of fair fighting" which are too often forgotten as tempers flare. Then the fight itself becomes the continuing center of contention. The careless words said in anger influence the relationship for the worse. The ideas of natural selection and the survival of the fittest and the laissez-faire attitudes of economics, which assume that free markets (always) bring out the best in people and produce the most goods for the lowest cost, arose in a time when this trap was an infrequently questioned assumption. Since then, we have learned to use the government to temper, but not to suppress, this energy, as well as to maintain fairness.

The Inevitable Antagonism Trap

The Inevitable Antagonism Trap is the assumption that conflict is always occurring between persons, groups, organizations, or nation-states and will always continue. We see it in the "battle of the sexes" literature that assumes that men and women have different and ultimately irreconcilable differences that force conflict upon them whether they want it or not. And there is an assumption among certain foreign policy experts that given nations will be in conflict because their interests in a given area differ. In a certain sense this acts as a self-fulfilling prophecy. If influential experts in two nations have

made this assumption, when they come to making decisions they will base them on the assumption of inevitable conflict of interests. This can produce a history of confrontations, which then is used to "prove" that throughout the history of their interactions, they have "always" been in conflict. Philosophical discussions frequently present Inevitable Antagonism in terms of primary "forces" such as Eros and Thanatos, Good and Evil, or in such antithetical pairs of figures as God and Satan, Christ and Anti-Christ.

Sometimes the Forever Changeless trap is combined with the Inevitable Antagonism. France saw Germany as involved in Inevitable Antagonism (and this was responsible for terrible blunders in French policy in 1919 and the 1920s) because the French leadership saw their peoples as unchanging aggregates with opposing lifestyles and philosophies. They saw themselves as forever changeless. Some have argued that Germany was seriously open to change as a result of the First World War. That this trap assumes that there will be antagonism at every point. In describing this trap, I am not arguing that countries and people can live without conflict. I am arguing that it is a trap to go through life with the belief that conflict is inevitable in almost every situation. This assumption ties in with the Force Can Do It assumption so easily that we have to beware of the pernicious combined effect of these two assumptions in human affairs.

The No Limits Trap

The dialectical point of view suggests that processes of thesis-antithesis-synthesis endlessly flow from one another, that there are no limits to changes that increases in quantity will bring. This boundless process thinking leads to what we call the No Limits Trap or Limitless Possibilities Trap. Behind this trap is the assumption, often deeply concealed from its holder, that one has limitless resources to draw upon. "There's always tomorrow" is a variation of the No Limits Trap that implies that human beings somehow have all the time they need to solve their problems.

Getting married or living together frequently seems to annihilate a person's sense of limits. The couple becomes ungrounded and believe they can "say anything" to each other. They can unleash their anger in ways they wouldn't have thought of doing before. They can criticize without holding back. They somehow can treat each other in ways that they would not think of treating anyone else--in public or private. This No Limits Trap behavior may create hurt that continues to harm the relationship for many years. The nuclear arms race is perhaps the single most outstanding example of the failure to extricate ourselves from the No Limits Trap on the international scene. The continuous push by technology to produce the next generation of weapons, rather than limiting them, has made the world more dangerous, made nations more vulnerable rather than less. For example, the failure to restrain the development of MIRV weapons produced a significantly more unstable world. Some people think that superpowers, because they have such large and capable military forces, are prone to thinking they can accomplish almost anything with them. The U.S. in Vietnam and the U.S.S.R. in Afghanistan found out differently.

Examples of this trap abound in the policy field:

Energy reserves. We assume that there are tremendous energy reserves yet to be discovered and that if we can put off the ultimate depletion of known petroleum reserves until the end of the century we won't have to worry about the future, since new sources will be developed.

Social Security. We raised social security benefits as a part of a short-run solution over the last 10 years as if doing this would not threaten the existence of the whole system later.

Radioactive Waste. We have millions of tons of radioactive waste accumulating at "temporary" storage depots while we assume that "science will find a way for us to dispose of it." The material in this "temporary" storage may itself have a half-life of hundreds of thousands of years.

There are many varieties of the No Limits Trap. Combined with formal logic, the No Limits Trap becomes.

The Endless Classification Trap in which analysis is stymied by addictive focus on enumerating the types and kinds of things to be studied instead of studying important functional laws between data.

The Bottomless Clarification or Infinite Distinction Trap in which researchers continue to look at all sides of a matter long after any useful purpose is served by so doing--if one indeed originally existed.

These quibblers' traps need to be quickly identified and disposed of in any analysis so as to ensure that the analysis reaches completion in a reasonable time.

The There's Got To Be A Winner Trap

The There's Got to be a Winner Trap derives from the assumption that every process in life is conflictual or at minimum competitive and that what I gain, you lose and vice versa. People who fall into this trap do so by misapplying the notion of winner and loser to situations where they are inappropriate.

Game theorists have described a class of games called "Zero Sum Games." These are games where what one team (or player) wins the other loses. There's a considerable debate, however, as to how many human processes can be fitted within this limited way of looking at the world.

Fisher and Ury (1981) give this example: "In 1964 an American father and his twelve-year-old son were enjoying a beautiful Saturday in Hyde Park, London, playing catch with a Frisbee. Few in England had seen a Frisbee at that time and a small group of strollers gathered to watch this strange sport. Finally, one Homburg-clad Britisher came over to the father: 'Sorry to bother you. Been watching you a quarter of an hour. Who's winning?' In most instances to ask a negotiator, 'Who's winning?' is as inappropriate as to ask who's winning a marriage. If you ask that question about your marriage, you have already lost the more important negotiation--the one about what kind of game to play, about the way you deal with each other and your shared and differing interest.... That does not mean it is easy to change habits, to disentangle emotions from the merits, or to enlist others in the task of working out a wise solution to a shared problem. From time to time you may want to remind yourself that the first thing you are trying to win is a better

way to negotiate--a way that avoids your having to choose between the satisfactions of getting what you deserve and of being decent. You can have both."

Summary

All these traps share a striking family resemblance. While they are process oriented rather than static as the formal logic traps were, they are all either conflictual or lacking in a sense of boundaries, or both. The most general of the dialectical traps is No Limits. Dialectics ignores limitation in as extreme a fashion as formal logic ignores change. Again it appears, as in the case of the formal logic traps, that while these are unlikely to be all the possible dialectic traps, those we have discussed do map the area sufficiently to provide specific ways we need to be alert to avoid trapping ourselves.

PART 3. CONCLUSIONS

How often do we fall into these traps? My hunch is that they are far more frequent than we would like to think. Formal logic forms the framework by which we divide up the world into entities. It gives us the ability to classify and to use the resultant concepts appropriately for survival. At the same time it contributes to our forgetting that change over time makes our words and thoughts, our concepts and classifications, out of date and hence frequently in error. Dialectics focuses our attention on change but tends to pay attention primarily to the aspects of quantity, conflict, and force in the change process, forgetting that in many situations that it is not differences in quantity that produce differences in quality; and forgetting that the use of force, even in conflict situations, does not always produce the desired result. Thus the formal logic and dialectic points of view are two-edged swords. They help us a great deal and they can harm us.

Some of the errors described by the traps are not, of course, unique to this presentation. Several philosophers, in particular those who walked under the banner of general semantics (Korzybski 1958), have gone deeply into the flaws in formal logic. Others (Churchman 1971) have unearthed particular flaws in dialectic thinking. Ichazo's insight (1982) has been to organize this propensity for error around the concepts of identity and change. This provides a useful perspective. It points out how pervasive the points of view of formal logic and dialectics must be. It also shows how we must be continually alert to the potential errors of these points of view.

We need to be cautious in applying the analysis of traps. The traps do not represent a complete analysis. They are not the only methods of making a critique of human thought. In many cases they may not even be the most important one. But identity and change are so central to thought that trap identification probably shouldn't be omitted in any serious analysis. Sometimes the identification of traps can result in trivial, "low-payoff" analysis where the big questions are left untouched. More work obviously needs to be done to determine the usefulness of applying this type of error analysis. We need to see the extent of benefits from uncovering the traps in various fields. We need to see if any traps are more widespread than others. If so, they're ones which we need to keep in mind all the time.

Lewis (1981), in an important article on error, says, "Irrespective of how we react to failure, it occurs to most of us, when we meet it, to lament the weakness in our problem-solving armory. Almost inevitably, we find ourselves wondering if anything can be done to strengthen the problem solving methods at our disposal. And, whether we realize it or not, this is tantamount to wondering whether anything can be done to identify and remove errors in our thinking. The message of this article is that if error is at the root of all our problems, then it is high time that theorists started looking at the nature and genesis of error more carefully. They might even discover that, in the final analysis, the problem of error is the only problem there is."

If Lewis is even approximately correct in his assessment of the importance of error detection, and if the traps of traditional logic and dialectics are as widespread as we suspect they are, then we have a large and very practical job ahead of us. The analysis of traps should lead us to review the question of what to expect from our conceptualization of any situation. There is perhaps an ultimate underlying trap in the belief that our verbal models are ever precise, accurate, or general at the same time. Perhaps our common belief could be called the Words Describe Reality Trap or the Words Can Do It Trap. It might be better to say that we move in a verbal world of more or less error. In an important sense, we almost always have at least one foot in one or more of the traps. Perhaps the best we can do is to work together to help each other to experience moments of less error.

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Notes 1. Aristototle used the term formal logic for what I call traditional logic in this paper. In the last fifty years, however, the term "formal logic" has come to be identified solely with the development of mathematical logic in the school of Boole, Frege, Whitehead and Russell. So I do not use that term in the descriptions of the logic of identity and change.

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