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# **ATIS: Transition from 5-Rings Methodology to Predictive Analyses of Intentional Systems The Threat of ISIS/ISIL is Predictable!**

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# Transition from 5-Rings Methodology to Predictive Analyses of Intentional Systems

*It would seem that ATIS analysis of system structure would uncover the intentions of terrorist agents.*

– Theodore W. Frick, Professor, Indiana University

## The 5-Rings Methodology

The *Five-Rings Methodology* as developed by Colonel John A. Warden III, USAF, is intended to analyze enemy threats to a nation and create strategic responses to those threats.<sup>1</sup>

While systems theory, especially General Systems Theory, is broadly based so as to consider all composites that might be construed as a “system,” when considering enemy threats, only “organic systems,” as defined by Col. Warden, are of concern.

As defined by Col. Warden, systems can be classified as either [inorganic](#) or [organic](#). As herein defined, an ‘organic system’ will be defined as any system that has the capability to “defend” itself in a manner to maintain its own integrity. The human “immune system” is such a defensive mechanism. Antibodies are introduced into the human body to further the ability of the body to “protect itself” against disease. Various evolutionary adaptations are the result of organisms developing defensive capabilities against predators. Societies have established police forces to protect the society from internal predators. Nations have established military forces to protect the nation’s interests – the political structure, society and culture – from outside predators.

In terms of the *Five-Rings Methodology*, this ability to exhibit self-protection is characterized by the ability to have a “Fielded Military” as part of a system’s structure.

There is a disparity, however, between the ability to analyze inorganic and organic systems in a manner that results in predictive outcomes.

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<sup>1</sup> This research relied on the work of Colonel John A. Warden III, USAF, as published in the following: *The Enemy as a System*; “Air Theory for the Twenty-first Century” in *Battlefield of the Future*; and *The Air Campaign, Planning for Combat*.

Inorganic systems, such as the solar system, mechanical systems, geological systems, etc., are analyzed in terms of various physical theories, and predictive outcomes are quite precise commensurate with the particular theory. Theories relating to organic systems, on the other hand, have not been so well-developed. Many organic systems have been well-described, but no comprehensive theory has been developed that would allow for predictability of an organic system's "behavior."

In *ATIS* (*Axiomatic Theories of Intentional Systems*), "[System behavior](#)" is defined as a sequence of system states. "[System dispositional behavior](#)" is defined as a sequence of system states that exhibit consistent parameters within a specified time period. [These terms and other system properties are more precisely defined within *ATIS*.]

Predictability of system behavior depends on the ability to predict the state of a system as the result of its present state or previous states, or as a result of inputs that alter the present state of the system.

The object of the defense mechanism of a nation is to alter an enemy's current system state (its current behavior) so as to preclude it being an immediate threat as a predator against the nation, and then to alter the enemy's characteristic sequential states (its dispositional behavior) so that it ceases being a predator over time.

While it is frequently claimed that behavior is not predictable, it is the behavior of an enemy system that must be understood and predicted if a nation is going to protect itself from destruction by enemies who threaten its existence, especially in a terrorist environment. The time is past when the anticipation of and preparation for war might take up to two years before actual conflict commences, and then commences in response to an enemy's actual aggression.

Today, the enemy's behavior must be predictable in a timely manner to preclude its acts of aggression, rather than waiting to respond to that aggression. It is the intent of *ATIS* to provide that predictive capability.

In this report, a brief overview of the *Five-Rings Methodology* will first be provided. This will be followed by a discussion of [behavior predictability](#) in general, and then a transition from the *Five-Rings Methodology* to the more analytically rigorous *ATIS* systems analyses.

The *Five-Rings Methodology* was developed as a means for understanding enemy threats against a nation and how one can most easily and efficiently counter that enemy threat. In order to understand an enemy, Col. Warden states that we must think strategically and in so doing:

"If we are going to think strategically, we must think of the enemy as a system composed of numerous subsystems."

Also, the enemy, as well as our own nation, must be thought of as a "strategic entity"; that is:

A **strategic entity** is a system that can function on its own and is free and able to make decisions as to where it will go and what it will do. A **strategic entity** is a self-contained system that has the general ability to set its own goals and the wherewithal to carry them out. A **strategic entity** is any system that can operate autonomously, is self-directing, and is self-sustaining.

## The Five Rings

The *Five Rings* defined by Col. Warden are as follows:

- **First Ring: Leadership**

The *Leadership Ring* is comprised of the [command subsystem](#), [control subsystem](#), [communication subsystem](#), and [intelligence subsystem](#), the [C<sup>3</sup>I subsystem](#).

- **Second Ring: Organic Essentials**

The *Organic Essentials Ring* is comprised of those subsystems that are essential for the survival of the system in its current state. These are subsystems that are required for system-maintenance processes.

For a nation, such organic essentials include the power production systems [electric power plants], petroleum production [petroleum refineries], bearings production [roller bearings, etc.], weapons production [biological and nuclear capabilities], and food production [for soldiers, and not the general population].

The number of organic essentials is relatively small. It is comprised of those subsystems that are *absolutely necessary* to maintain the viability of the system. Food production; for example, is *absolutely necessary* only for the military, since if the military does not succeed, the civilian population will be destroyed anyway by the enemy.

This destruction of the civilian population is very graphically demonstrated by the advancements of ISIS when they overrun and take control of a population.

- **Third Ring: Infrastructure**

The *Infrastructure Ring* is comprised of those subsystems that are non-essential for the survival of the system in its current state yet maintain the integrity of the system by carrying out various system functions.

For a nation, such subsystems are those that maintain the political, social and cultural integrity of the system. These infrastructure subsystems include the transportation system and all non-essential industry. In particular, it would include rail, air, sea, and highway systems, communication lines and pipelines. Further, it includes all industry not considered as organic essential.

- **Fourth Ring: Population**

The *Population Ring* is comprised of the system's human components. For an organic system, these are the components that establish relations that identify the integrity of the system.

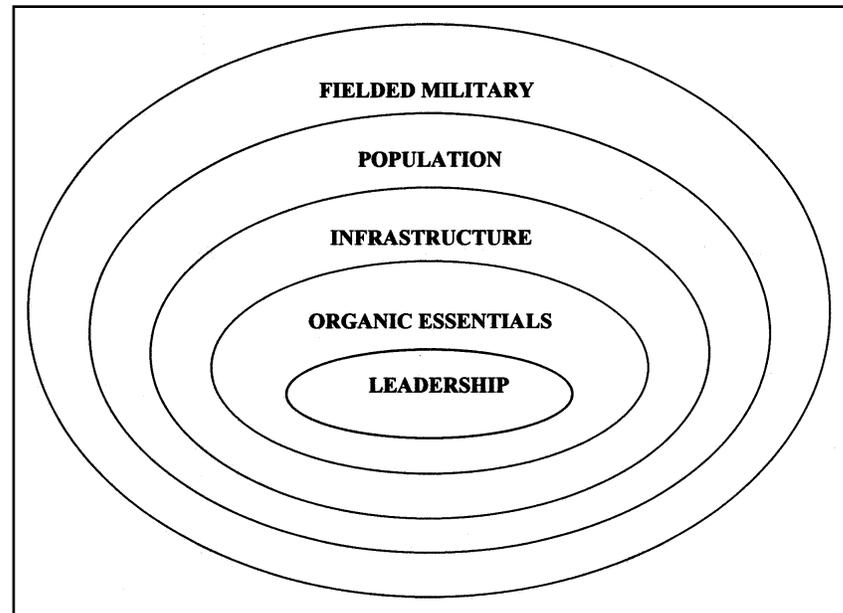
For a nation, this subsystem is the population of the nation. These are the people, the components, who enter into various political, social and cultural relations that maintain the integrity of the system.

- **Fifth Ring: Fielded Military**

The *Fielded Military* is comprised of those subsystems that provide the self-defense capability of the system.

For a nation, this is comprised of the aircraft, ships, troops, etc. of the military subsystem.

The *Five Rings* are graphically portrayed as follows:



## Is Behavior Predictable?

### The Restricted Behavioral System

It is a widely-held belief that behavior is non-predictable. Such is not the case as will be demonstrated below. In *The Enemy as a System*, Col. Warden, reinforces the belief that human behavior is not predictable. In general, he is quite accurate. However, he gives an example of behavioral system predictability – inducing *strategic paralysis*. By inducing strategic paralysis a predator's behavior is *absolutely modified* so as to preclude it behaving in a threatening manner. In the field of medicine, we continually strive to cause a strategic paralysis with respect to smallpox, polio, and TB. Our efforts have been successful with few recurring threats. The Gulf War certainly modified the behavior of Iraq with respect to Kuwait, and that behavior modification was certainly predictable, even if it may have been surprising that such could be achieved essentially by air. Specific actions were taken because it was predicted that such actions were known to be effective in accomplishing our objective. Inducing strategic paralysis will absolutely modify behavior in a predictable manner.

We have seen that in a stated effort to combat ISIS/ISIL, we are not effective specifically because there is no plan to induce *strategic paralysis* of ISIS/ISIL. Without such a plan, ISIS/ISIL will continue to strengthen and become an increasing threat to the homeland of the United States. There is no plan nor intent to *absolutely modify their behavior*, and, therefore, there is *no plan nor intent* to actually “*degrade and destroy ISIS/ISIL*” ... regardless of pronouncements to the contrary!

Until our political and military leaders understand that in order to defeat ISIS/ISIL we must have a plan that induces *strategic paralysis*, then there is actually no intent to in fact destroy ISIS/ISIL. As a result, the homeland is in fact in danger.

To put this research in perspective, however, we will be restricting the systems of concern to those organic systems that are characterized by complex political, military, social, and cultural organizations. While discussing individual-predictive behavior for the purpose of analyzing predictive behaviors, our end goal is to be able to predict the behavior of terrorist organizations in a war-time environment. It will be seen that it is much easier to predict the behavior of such an organization rather than the behavior of an individual. However, it will also be seen that as the behavior of the organization is predicted, such behavior may focus on certain individuals whose behavior also becomes predictable.

This focus is necessary at this point so that there is no concern that we are proposing a broad-based theory that claims to be able to predict; for example, at what time on a specific day a specific individual will leave home to go to work. Such “behavioral predictability” is nonsense and is a gross distortion of the nature of the theory of intentional systems being proposed. Day-to-day human behavior is essentially non-predictable, although certain behaviors may be presumed (for example, at what time someone may leave for work on a given day), as people are intentional beings who can change their intentions from one minute to the next.

However, while the theory being developed is focused at the complex human-organizational level, it will also be seen that it is human-specific individually-predictive with respect to certain clearly defined individuals of that organization when their behavior is designed to further the goals of the organization.

Further, *ATS* is a non-statistical-based theory. It is an axiomatic theory. Statistical-based theories are only group-predictive and *never* will be individually-predictive. An axiomatic theory can be individually-predictive at the human-specific level when those behaviors are structurally-integral to the human organization.

## Behavioral-Predictive Systems

As stated previously, it is a wide-held belief that behavior is not predictable. Col. Warden asserts:

“We can think broadly about war in the form of an equation:

$$\text{(Physical)} \times \text{(Morale)} = \text{Outcome}$$

The physical side is knowable and predictable. Conversely, the morale side, the human side, is beyond the realm of the predictable in a particular situation because humans are so different from each other.” (*The Enemy as a System*, Air University.)

While Col. Warden reinforces this conclusion at various times, we need to look at what he is actually doing when analyzing an enemy system. He states that by inflicting severe physical damage, *strategic paralysis* can be attained; that is, conditions can be attained that will make it physically impossible for an enemy to oppose us or to maintain any predator capability.

There are two extreme conditions that will result in the ability to predict behavior:

(1) We can predict with great certainty that if we annihilate the enemy, the enemy’s behavior will no longer be a threat.

(2) We can predict with great certainty that if we do nothing, the enemy’s behavior will not change and will remain a threat in the same manner that it is currently threatening, and that the threatening behavior will in fact increase in severity over time.

**This is absolutely predictable**; for example, with ISIS/ISIL! When we in fact have absolutely no plan to cause *strategic paralysis* for ISIS/ISIL, then ISIS/ISIL will in fact become increasingly threatening and will in fact carry out more severe attacks against the American interests and the American homeland.

The question, then, is not whether behavior is predictable, but what is the degree and nature of that predictability?

If a person is standing at the edge of a cliff, can we predict whether or not the individual will jump? Possibly not, without intervention; that is, if we physically intervene we can certainly predict that the individual will not jump. But once the person jumps, we can predict with great certainty that, without added resources, the person will fall, and if the fall is of great enough distance and the landing is on rocks, the individual will die. We can predict with great certainty that the behavior of the system (the individual) will result in the death of the system (the individual). Now, however, the question of concern is the first – will the person jump?

Will the person jump? The question is not totally unknowable if we know something about the individual. Depression. Substantial personal loss. Chemical imbalances. Psychological disorders. Etc. If any of these exist, then predictability is more certain. It may be even more certain if we know that the person is compulsive.

Initially, we should think of predicting behavior as a semi-decision procedure. That is, we can frequently predict one outcome with certainty and another outcome will have a degree of uncertainty. For example, imposing strategic paralysis results in the ability to predict a predator's behavior – the predator will no longer be a threat. And, such can be predicted with great certainty.

Therefore, we see that where behavior is linked to physical parameters, predictability of behavior can be quite certain. Where behavior is linked to psychological, emotional, or intentional parameters, predictability is compromised but not totally negated. The use of suicide counselors; for example, is predicated on the belief that intervention helps to preclude suicide behavior, and many success stories of such intervention are available.

Predicting suicide behavior is a semi-decision procedure. That is, without intervention, it is believed that suicide is almost a certainty – otherwise there would be no need for suicide counselors. With intervention, suicide behavior may, with substantial confidence and predictability, be avoided.

Further, if the person contemplating suicide is in custody, a “suicide watch” may be instituted to immediately intervene to physically restrain the person from committing suicide whenever necessary. This is a *strategic paralysis* intervention.

Therefore, predictability is dependent on the nature of our intervention or non-intervention. Without intervention, suicide is predicted with a fair degree of certainty. With physical-restraint intervention, it can be predicted with great certainty that suicide behavior will not occur – at that moment.<sup>2</sup>

Therefore, predictability of behavior is not characterized by unfathomable uncertainty that is frequently believed.

Another example of behavior prediction should further clarify the nature of this endeavor.

A nation expends substantial resources on education. The reason for this expenditure is that it is quite certain that without that expenditure the citizens of that country will not be able to be personally productive in a manner that furthers the goals of the nation. That behavior of the citizenry is predictable and certain.

The semi-decision outcome in this instance is as follows:

(1) One outcome is certain – without education, the nation will not survive in its present state and with its present goals.

(2) With education, the nation has a chance of surviving in its present state and with its present goals.

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<sup>2</sup>It must be remembered that when speaking of “behavior” in this context we are concerned with the overt act of the system, the individual, and not the “intent” of the person. That is, the person may certainly still wish to carry out a suicide even while being constrained, but the ability to behave in a manner to succeed has been compromised; the intentional behavior has been obstructed. When speaking of “enemy systems,” we do not care what the enemy “believes,” only how the enemy “acts.” If the enemy acts in a non-predatory manner, then the enemy behavior has been controlled or modified. Enemy intent is only a concern when the enemy has the ability to carry out those intentions, and it is predicted that the enemy will act on those intentions.

To this point, we have been discussing predictability at the nation level, and not at the individual component (personal) level.

When speaking of not being able to predict behavior, it frequently is meant being able to predict individual behavior. Even at the personal, individual level, however, predictability is not as nebulous as one might believe.

For example, if one wants to become a mathematician, then one needs to learn mathematics. It can be predicted with certainty that if one does not learn mathematics, one will not be able to behave as a mathematician and, thereby, will not be a mathematician.

As with the other semi-decision procedures, however, if one does learn mathematics, it is no guarantee that one will be a mathematician. So, where does that leave us? Can we predict with any degree of certainty whether or not an individual will be able to behave like a mathematician and thereby be a mathematician? The answer is, “Yes.”

The first step in predicting this behavior is a very simple one – ask the individual if there is any intent to become a mathematician. If the answer is “No,” then it is reasonable to predict that the individual will not become a mathematician. If “Yes,” again there is uncertainty.

At what point can it be decisively predicted that the individual will become a mathematician?

This is the critical step to any predictive outcome. The answer is that it depends on how one defines “mathematician.” That is, will a B.S. degree in mathematics be sufficient? M.S. in mathematics? Ph.D. in mathematics? Working as a mathematician? Contributing to mathematical theory development?

With a certain knowledge about the individual, it may be predicted very early, as much as four years in advance, with great certainty that the individual will obtain a B.S. in mathematics and will thereby, under the first criteria, be considered a mathematician. And so with the other criteria.

Is it difficult to predict whether or not one will function or behave as a mathematician? No. Given the criteria and enough information about the individual, a predictive mathematical behavior can be made, and made far in advance of the individual actually behaving in the appropriate manner. And, the amount of information required for predictability is, in fact, quite minimal.

There is much about the individual that is irrelevant in predicting certain behaviors. To make reasonable predictions, we focus only on that information that is constructively relevant to the making of the prediction. At the B.S. level for predictability, the information may only need to relate to intent and relevant academic ability. Other factors, however, may have to be considered – the individual’s longevity expectation (is there a known disease that will preclude the person from living long enough to obtain the degree), accessibility to college, financial resources, etc.

Open-ended information accumulation is not required for predicting behavior.

The difficulty with behavior predictability is not that it is impossible or even nebulous. The difficulty is that we generally do not have the system (individual) state sequences (behavior) required to make an informed prediction.

Additional protests concerning the ability to predict behavior concern the argument that people can be whimsical, obstinate or purposely contrary.

The first question in such circumstances is, does such behavior characterize the individual? That is, is this person's dispositional behavior one of being "whimsical, obstinate, or purposely contrary"?

- ◆ If it is, then the behavior is in fact quite predictable.
- ◆ If not, then, again, the behavior is quite predictable.

Dispositional behavior, while not providing certain predictability, does in fact provide a legitimate basis for predicting behavior. In general, by definition, an individual's behavior can be predicted to be consistent with the individual's dispositional behavior; since, otherwise, such behavior would not be characterized as "dispositional." And, it must be remembered that dispositional behavior is "context-sensitive." That is, it must be known what the dispositional behavior is of an individual within each behavioral environment of concern.

The problem with predicting behavior is not its complexity, it is due to a lack of a proper analysis of the sequence of system states that define the behavior. And, this is not obtained by any statistical analysis, or looking for "patterns" of behavior. Consistent sequential states are not patterns, but are well-defined descriptors of system properties that result in mathematically-verifiable models that are definitive in their description of system behaviors.

*ATIS* defines system behaviors in terms of an *APT-analysis*. While the *APT (Analysis of Patterns in Time)* method was initially developed as a statistical-based method for describing systems or phenomena, *ATIS* has redefined this method as an *APT analysis* without reference to "patterns." Instead, each *APT mapping* is to be considered as one might view a CAT Scan – it is an empirically-based cross-section that definitively defines a system's behavior at a given time. An appropriate sequence of such empirical cross-sections defines the behavior of the system over time.

The first step toward predicting behavior is to believe that such predicting is possible.

When behavioral systems are restricted to certain types of behavioral systems, then predictability is enhanced even more.

For example, our main concern is with terrorist organizations in a war-time environment. We are concerned with predicting the behavior of known predators and identifying terrorist behavior that threatens the nation's or its population's security or survival.

The choice now is whether to continue to rely on statistical-based analyses that, **by design**, are not and never will be individually predictive, or to choose to analyze systems in terms of a logical theory that can be individually predictive.

By using a logical theory like *ATIS* that analyzes system structure for determining behavior predictability, such analysis relies first on the  $\bar{I}_{IB}$  (*Integrated Information Base*).

From that  $\bar{I}_{IB}$ , however, predictability is determined by a logico-mathematical analysis of the system parameters, and not on "patterns" generated statistically from a database.

The problem of attempting to predict behavior from unstructured data is two-fold: first, a database is created from the unstructured data by determining “patterns” within that data by which categories are defined; and second, “patterns” within the categories are used to generate “predictions.” Such is not possible with any degree of confidence in a terrorist environment.

**When one looks for patterns in unstructured data unguided by legitimate theory, one will find whatever one is looking for.**

As we have seen with the “Bible Code,” unstructured data can generate patterns that are totally groundless for predictive outcomes. Such reliance is unconscionable in a terrorist environment.

However, if the database developed from unstructured data, the  $\bar{I}_{IB}$ , is made a part of a system designed for structure analysis that generates a sequence of system states that are then analyzed as the result of an axiomatic theory, then behavioral predictions can be made with a fair degree of confidence.

### The Homeostatic-Dynamic Teleological System

Predictability of behavior has its foundations in a [\*homeostatic-dynamic teleological system\*](#). The organic systems with which we are concerned are characterized by homeostasis and dynamic teleology, which are defined as follows:

**Homeostatic system** =<sub>df</sub> Stability of the organic-essential subsystem under subsystem environmental change.<sup>3</sup>

**Dynamic teleological system** =<sub>df</sub> Leadership subsystem-directed system behavior, such that the leadership subsystem controls the system’s behavior in a manner determined by the foresight of the subsystem’s goal.

Such a homeostatic-dynamic teleological system can be analyzed in terms of a knowable sequence of system states that define the system behavior.

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<sup>3</sup> “=df” is read: “is defined as.”

Further, a proper *APT-analysis* will establish the systems dispositional behavior. With this profile as a basis, tychistic events<sup>4</sup> can be measured against this profile to establish diverging behaviors and capabilities. Such an analysis is established by Raven58 Technologies' [\*Phoenix Algorithm: A Behavior-Predictive Algorithm\*](#).

## Transition to Behavioral Systems Analysis

While the *Five-Rings Methodology* provides an excellent analysis of enemy systems in a conventional military environment, more is required when terrorist network systems are involved.

The need for a greater analytic ability stems from the nature of the threat. The threat arises, not from standing armies, but from individual terrorists, small groups, or now with ISIS/ISIL, with terrorist armies—all of which are targeting civilians and civilian industries. In this environment, the need is to know what those individuals, small groups, or terrorist armies are planning to target; that is, what is the expected behavior of the terrorists with respect to their specific threatening behavior.

Actually, with the advent of the *Terrorist Army*, this problem becomes easier in that there are definite geographical locations where such armies are located, and where they expand to. They are not state-confined by borders, but still operate in a more regular-army environment.

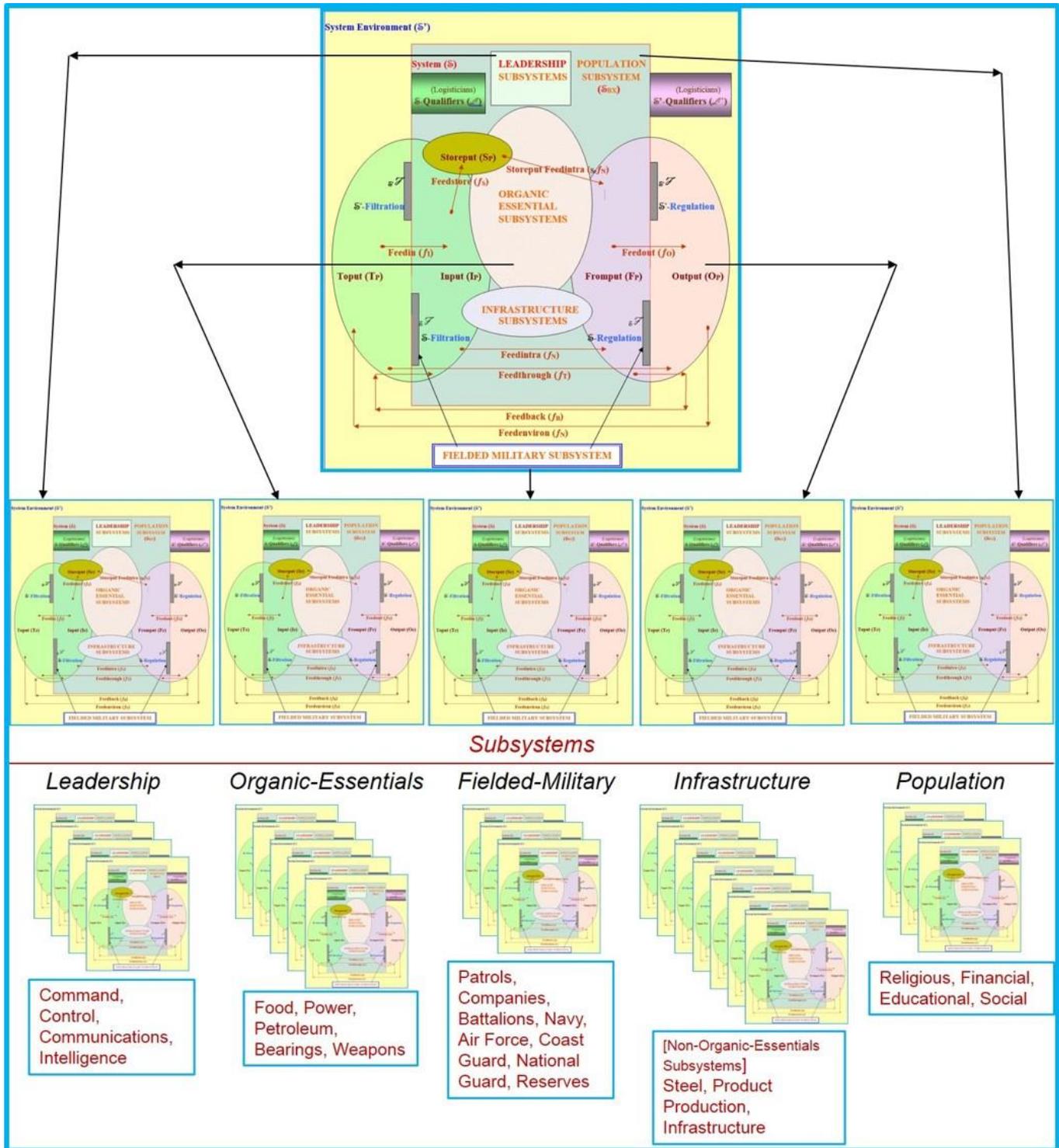
In order to provide the required analytic tools, the *Five-Rings Methodology* will be mapped onto the system structure required for an *ATIS*-analysis.

The mapping is shown below. This provides the structure under the *ATIS* system. This mapping illustrates the fact that each subsystem of the first level must be mapped onto additional system structures, which are then mapped onto third-tier subsystems, and so on. Then, it is the subsystems at these levels that must be analyzed and coordinated with each level analysis. These mappings indicate the complexity of analyzing all of the various subsystems that are involved.

Behavioral predictions are then obtained as a result of analyzing the three-tier or more systems at each level and integrating the results of those analyses.

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<sup>4</sup> “Tychistic events” are those that arise due to chance spontaneity. These events, analyzed with respect to the system dispositional behavior, give rise to the predictability of the system’s future behavior that may be inconsistent with the current system behavior. Predictability, to be of value, cannot be simply an extension of the current dispositional behavior. Predictability must be able to predict that which is not obvious, that which is inconsistent with the current state of the system. It is for this reason that statistical analyses that rely on “patterns” of acquired information cannot provide a reliable predictive base. By the time the new pattern of behavior has been established, the terrorist threat has already occurred.



The promise of this research has been recognized by Theodore Frick, Professor, Indiana University:

*You (Ken Thompson) want to identify intentions that are likely to persist – that is, ones which clearly threaten our homeland security – and what those intentions are with enough specificity, as provided by the  $\bar{I}_{IB}$ , in order to prevent them from being carried out.*

*It would seem that your ATIS analysis of system structure would uncover those intentions.*