**DECISION SUPPORT SYSTEMS, inc.**

D S S I  *METATEMPO: SURVIVING GLOBALIZATION*

# CONTINUAL & COMPLETE INTELLIGENCE

## A 21ST CENTURY APPROACH

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## AUTHOR'S PREFACE

Since the events of 11 September 2001, Decision Support Systems has received a great deal of professional interest on matters related to security and intelligence. We believe that 11 September 2001 is a testament to the fact that every organization has to do its best to meet its own intelligence needs. Thus, we are re-releasing this paper on our Continual and Complete Intelligence Course to assist our audience in attaching rigour to their own information provision.

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February 2002

## THE CONVENTIONAL INTELLIGENCE CYCLE: COMMAND & CONTROL

The purpose of the conventional intelligence cycle is to have adequate, accurate detail to make informed decisions. The flow of the conventional intelligence cycle includes the following steps:

- *Set the direction:* What is the intelligence need? What is the intention of the intelligence gathering operation?

- *Perform the planning:* How is the intelligence to be gathered? From what sources?

- *Communicate the tasking:* Gathering and collection plan– who, what, where, when, how

- *Gathering and collection:* Working the sources, communicating the results

- *Processing the results of the effort:* Centralization of the raw materials, making connections to compartmentalize

- *Analysis to create the product:* What is the meaning? What are the implications?

- *Distribution and dissemination of the intelligence product:* Delivery of the product package to 'those in the know'

In short, the intelligence cycle creates a product that is supposed to aid the decision-makers or others with 'need to know' in the process of measuring, monitoring, managing, and mitigating, i.e. the 4 M's.

## PROBLEMS WITH THE CONVENTIONAL INTELLIGENCE CYCLE

It's essential to know the failures of the conventional intelligence cycle to avoid the illusion of omniscience.

- The conventional cycle is a legacy approach rooted in centuries of 'top down,' hierarchical, command & control mindset; this is appropriate or effective in fewer and fewer applications.

- 'Operational threads' of the conventional cycle are hampered with constraints such as duration limits, or inability to enact tempo as a competitive advantage.

- Effort and activity in the cycle are discrete, in a digital sense– isolated 'blips' that lacks responsiveness or flexibility, yet carry considerable sunk and opportunity costs.

- Scale and scope undo conventional efforts– information overload affects every stage of the cycle.

- You don't know what you don't know, leaving moral and material surprise unaffected and unaddressed.

- The structure of the cycle limits the ability to even approach completeness, and the action of the cycle perturbs the system.

- Thresholds in the system are set inappropriately: what's a 'minimum necessary' product? When is more just more? When does having more information become confusing or actually mean knowing less?

- Collateral detail is lost in the process, increasing the necessity of assumptions, narrowing an understanding of context, dropping connections and associations, isolating the factors of credibility, not addressing the critical issues of trust, discounting the perishability of the raw material, reducing the quality, and limiting the value of the product.

?? Dogmatic, uninformed adherence to the 'tradecraft' of the cycle impacts on security, creates 'echos,' disconnects the product, initiates consequence cascades, and destroys the usefulness of the cycle: this begins with the isolation of the decision-makers setting intent, extends through the need for 'multiple, independent, credible' sourcing, compartmentalization divorcing the 'knowledgeware' of the product, and ends with the same isolated decision-makers left to act or not, with general lack of feedback or iteration.

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## TENSIONS AND TRADE-OFFS IN INTELLIGENCE METHODOLOGY

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Such problems with the intelligence cycle aren't 'intentional'— they're products of legacy approaches (cognitive, technological, social, etc.), and poor meta-decisions (decisions about decisions) affecting the cycle.

?? Intelligence about 'tangibles'— like capabilities, things that can be counted or measured— is more acceptable than intelligence about 'intangibles'— like intentions, cognitive approaches, emotional states— even though the value of intelligence about intangibles is generally far more valuable.

?? Monolithic approaches to intelligence force trade-offs such as speed of the cycle fulfilling the needs of the decision-maker for product, as opposed to accuracy, timeliness, or exhaustive nature of the product.

?? Necessary shifts in the cycle to create convergent product— that which reduces down to explicit detail— are in direct odds to what is necessary in a cycle to create divergent product— contextual assessments, observation of emergent processes, and other expanding systems.

?? Production or sheer quantity becomes more important because it's measurable, a fundamental assessment point of bureaucratic structures, rather than quality of coverage, which defies easy measurement.

?? 'Current reporting' or a 'lite' state-of-the-world takes less effort than analysis, and thus generally supplants it rather than being complimentary products; current reporting is, however, opportunistic rather than directed, and thus encourages 'gaps' in intelligence coverage unless explicitly accounted for.

?? Objectivity is a goal than can be approached in gathering and collection efforts, but can be impacted or undermined in the compartmentalization or analysis stages; feedback from the decision-makers, called the 'consumers,' can lead to bias or 'politicization' of the intelligence product.

?? The duration and 'discrete' (isolated) nature of the cycle means that intelligence product may quickly 'fall out of step' with the subject matter it purports to cover, and even the most systematic gathering and collection effort has problems coping with novelty

> *The conventional intelligence cycle is intended to support command & control structures in situations where the command & control approach is appropriate and effective. Such situations are increasingly fewer and far in-between.*

Rather than monolithic, hierarchical, top-down, command & control (C2) style intelligence, modern contexts and situations demand something qualitatively different. The purpose of 2C intelligence is to construct and provide models in a timely, accessible fashion to enable the decision cycle.

?? Models are cognitive structures that represent process and structure of:
- o Cybernetics: decision cycles, courses of action, tempo
- o Complexity/emergent systems: context, content, constraints, consequences
- o Cognitive transformations: data, information, knowledge, wisdom
- o Situation report: state, indicators, options, effects

?? The modeling process is internally recursive, iterative, and continual

?? Decisions are made continually as part of every element of every organization or structure
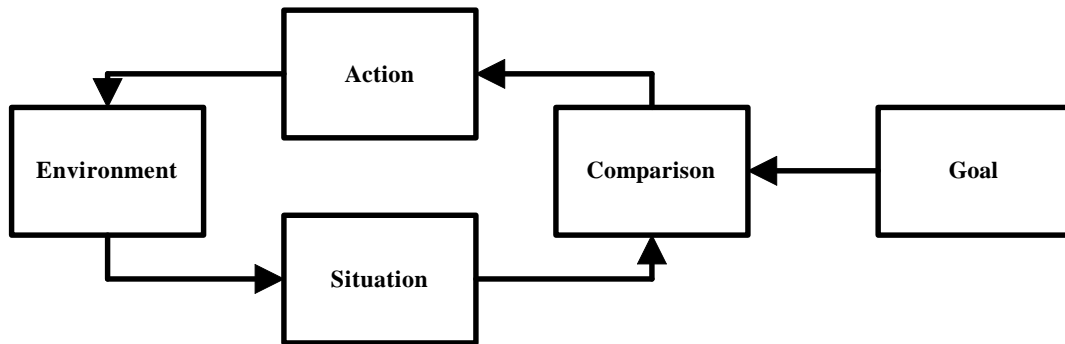


Figure 1: A Responsive Cybernetic Decision Model

The 2C intelligence cycle strives to make every element of every organization both a producer and consumer of intelligence models, with roll-ups, push-downs, and roll-outs. It delivers what the consumer needs– comprehensive and comprehensible models to aid in decision making:

?? Decisions are made where most appropriate– at the direct point of contact with the issue

?? 'Decision points'– places where options can be created or selected among, or an opportunity exists to 'course correct'– need to be 'devolved down'

Information

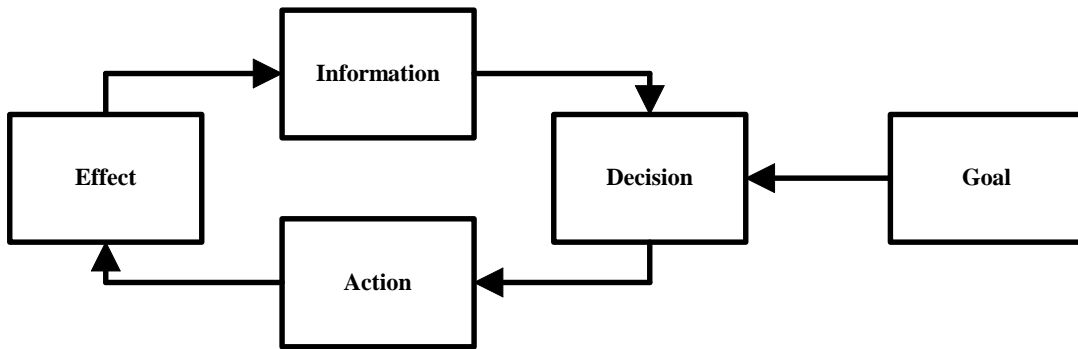Effect          Decision          Goal

Action

Figure 2: The Necessity of Information in the Decision Cycle


Resolution or granularity of decision points is critical to responsive, high-tempo, flexible intelligence and decision-making:

?? Detailed decision point structures– scenarios with sequels (what to do when the results of a decision are beneficial) and branches (what to do when the results of a decision are adverse)– allow more rapid 'course correction' because reassessment is more frequent or continual

?? More decision points either require greater/higher-tempo intelligence fulfillment, or more 'abstract' cognitive decision mechanisms and tools

?? Higher iterations of the intelligence cycle can burn out participants

?? More abstract decision point structures are more 'consumable,' and have the upside of allowing cross-domain comparison; higher levels of abstraction do, however, shift assumptions, and can lead to surprise, or decisions made on inadequate models– 'overrunning your intelligence' or the 'fog of war' are in part caused by over-abstraction of decision points

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## PROCESS OF 2C INTELLIGENCE

The following elements are critical components of a continual and complete intelligence cycle.

?? *Frame the objectives*
   o Map the data, information, knowledge, wisdom possessed and needed
   o Expect an oscillation of divergent-convergent objectives: an expansive look at the possible domains necessary to map, followed with deep detail and analysis of specific areas, over and over

?? *Perform the planning*
   o Initiate a spectrum of intelligence product cycles: current reporting, tripwires, divergent-convergent analysis
   o 'Rapid prototype' the intelligence product cycle to gauge the scale and scope of various efforts for critical factors: metrics, sustainment, lifecycle, resource allocation, appropriateness, effectiveness, feedback needs

- *Communicate the objectives*
  - o Devolve the decision points to the element of the organization best capable to handle– local control, where the information and skill base reside, and which has direct contact with the decisional domain
  - o Understanding the 'why' or the 'big picture' and allowing local elements to tap into 'best practice' for decisions, access to the collective intelligence product of the organization, and freedom to use their own initiative to cope with the new or novel, then communicate the entire process back into the organization in real-time, provides a responsiveness and leverage not possible in 'isolated' approaches

- *Gathering and collection*
  - o Everything is intelligence; knowing what needs to be immediately made available to the organization, or what is 'trivia' requires training and experience, but pays off in results
  - o Continual communication or availability of intelligence needs or requirements throughout the organization allows elements of the organization to re-categorize the 'local,' the 'trivial,' or 'unimportant' as-needed

- *Processing the results of the effort*
  - o Continual and complete intelligence means that elements of the organization aren't 'in the dark' or have a hierarchical position maintained by limited access to necessary data, information, knowledge, or wisdom
  - o Being a source and a consumer means having constant access to the organization to make intelligence requests as well as being responsible and responsive to objectives

- *Analysis and perspective create the product*
  - o Domain expertise may still be necessary, but what's most important in this approach is perspective; local requirements and local decisions still need to be held inside the larger context of the organization
  - o If every element of the organization has continual access to the complete intelligence produced, there's a greater potential for more distributed understanding, discovery of meaning, and exploration of implication, than if the product is held isolated, restricted, or compartmentalized

- *Distribution and dissemination of the intelligence product*
  - o Everyone is 'in the know' and everyone has things they 'need to know,' on an on-going basis
  - o Organizational decision-making processes should be better informed, more responsive, and increasingly effective

The 2C intelligence cycle is recursive (each step may contain smaller, complete cycles, or non-linear aspects) and iterative (the real intelligence process never ceases).
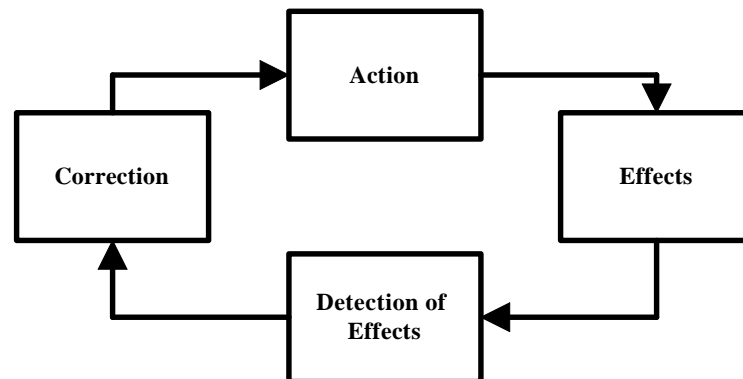


Figure 3: The Benefits of Iterative Intelligence/Decision Cycle

## APPROACHING A BEST PRACTICE

A best-practice in continual and complete intelligence requires, at the minimum, the following elements:

??  Build and maintain models and databases– keep them current and 'in-step,' with models being congruent, having good correspondence to what they represent

??  Think ahead and work ahead– trends and wildcards can be prepared for in advance
  o  Trends are conservative– something is generally like its 'local' neighbors in time or space; real radical change is rare
  o  Wildcards are 'what if' or 'when, not if' events, but still tend to have leading indicators, early manifestations, or can be planned against
  o  Brainstorm and game out potentials and contingencies– scenarios & simulations, with sequels and branches

??  Nothing is ever wasted
  o  Build 'boilerplate'– templates, raw materials, libraries of resources to 'cut and paste' from
??  Create and maintain a support network
  o  Internally, an on-going experienced capability to enable the intelligence cycle (a 'cadre')
  o  Externally, cultivate comprehensive support networks– contacts, sources, leads, etc. Extensive networks include expert resources in core areas of interest, but also 'high novelty' resources with very different areas of interest– networks of 'weak ties' have the highest novel information (any difference that makes a difference) quality

??  Hone the process
  o  Clearly communicate the objectives
  o  Maintain mechanisms for objectivity and perspective
  o  Prioritize on the essentials

??  Deliver a timely 'minimum essential' product (the 'rapid intelligence product prototype') and build it out with successive iterations of the cycle

## FRAMEWORK FOR A MINIMUM ESSENTIAL PRODUCT

The following is a framework for a minimum essential product of 2C intelligence:

??  Components of model construction: assumptions, facts, analysis, perspective

??  Quantification and qualification: context/environment, entities/actors, situation/state

??  Constraints and interactions: environment and entities/actors, entities/actors and entities/actors

??  Entities/actors
  o  Intent, mission, purpose, objectives
  o  Capabilities, strengths and weaknesses, competencies
  o  Composition, disposition, activities, operations, assets
  o  Products, services, position, resources

??  Opportunities, potential courses of action

?? Process maps, approaches

?? Areas of engagement, market sectors

?? Knowledge maps: what's known, what's unknown, what's uncertain; what others may or may not know; what needs to be known

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## KNOWLEDGE MAPS: DATA-INFORMATION-KNOWLEDGE-WISDOM

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Using the transformational processes from cognitive science and complexity/emergent systems theory, the following are the components from which models are constructed:

?? *Data—Context*
- o What we experience directly or through proxy, such as scientific instruments, video cameras, human communication, etc.
- o Context: the circumstance, setting
- o Example: watching a rock fall off of a ledge

?? *Information—Content*
- o Data reduces to information by a process of filtering/exclusion
- o Context differentiates into Content: Processes—entities/actors, relationships, messages
- o Drawing boundaries
   - ✍ Bateson: information is any difference that makes a difference; distinctions
- o Example continued: measuring the time it takes the rock to fall and the distance it falls
   - ✍ Extracting the rock (content) from the environment (context) and the measurement (relationship, deltas/differences) transforms the data into information

?? *Knowledge—Constraints*
- o Information becomes knowledge through analysis/generalization
- o Further on the example: taking the rock measurements and deriving gravitational force, or a formula for velocity at a given distance or time, is knowledge creation
- o Intra-contextual information; Constraints
   - ✍ Limits, boundaries, relationships in context/content
   - ✍ Dynamic: noise/signal are context dependent
- o Application, reduction to practice
   - ✍ Knowledge is 'useable,' data/information are observation and discrimination
   - ✍ Example: knowledge of object motion– artillery, ballistics, aeronautics, etc.

?? *Wisdom—Consequences*
- o Poorly understood and appreciated; involves concepts and systems, perceiving interactions and relationships, integration and abstraction back into context (as well as larger or new contexts)
- o Inter- and meta-contextual understanding; Consequences
   - ✍ Purpose, outcomes, effects, implications
- o Example concludes: knowledge of motion and gravity (on Earth) leads to understanding astronomy, atomic motion

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## CRITICAL FLAWS OF MODELS—THE 3 F'S

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Continual and complete intelligence is built on using models to inform the decision cycle, but the model building process is complicated by three common but critical failures.

?? *Models are 'frozen'*
- o  Models are static without a process in place to keep them current
- o  Models without continual maintenance rapidly 'fall out of step' in direct proportion to the tempo of the system modeled, leaving the decision-maker using information that may no longer be relevant or apply

?? *No model is 'complete,' so aspects are always 'forgotten'*
- o  Any model that equals the complexity of the system modeled would essentially be a direct copy
- o  Models simplify the system modeled by dropping considerable detail– this may or may not be problematic, but it certainly needs to be understood

?? *Distortion creeps into model structures, just as if they had been 'flattened'*
- o  Models tend to be 'flattened'– by perspective, attention, 'digitization,' or in the description (Turing)

A good example of the problems making models is the common photograph: a static 'snapshot' of what was a dynamic event/context; much of the detail is lost in a photo (what's behind something? what's underneath?); the clipping plane of the photo has flattened a spatial context into two dimensions. In other words, the model drops a dimension, time, and vast amounts of detail. The closer the model is as an accurate representation of reality, the more useful it is in making decisions– this is why the intelligence cycle is critical.

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*Continual and complete intelligence process is directly intended to meet the modern decision-makers' needs—high tempo, distributed, appropriate, and effective.*

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## 2C INTELLIGENCE PRODUCT IN THE ABSTRACT

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### THE META-OBJECTIVE: THE OBJECTIVE OF OBJECTIVE

In conflict, the meta-objective is what generates missions and mission objectives. In business, for example, this means determining the strategic positioning of the organization and establishing its brand. The process of establishing the meta-objective includes the following steps:

?? *Define the fundamental underlying principles, scope and scale, and functional process*
- o  What do you have the will to achieve?
- o  What are the areas of interest? What are the areas of operations?
- o  How do you differentiate? Contexts? Inside a context?
- o  What level of detail is appropriate in order to adequately accomplish the tasking, and meet the decision points' tempo and timing?
- o  What are the 'current' knowledgemaps, what must/should/could be refined through tasking, and how will that be accomplished?

?? *Branding and positioning create a similar overall framework that businesses support and use to generate their value*
- o  What is the image or symbol that acts as the brand representation?
- o  What is the identity associated with the brand? What utilization will there be of avatars and icons?
  - ✍ Avatars are 'representatives' symbolizing the targeted individual– the consumer can 'replace' the avatar with him-/her-self comfortably
  - ✍ Icons are 'pinnacle' symbols– the consumer would like to 'replace' the icon with him-/her-self

- What expectations are created in the consumer regarding the brand, and what does the brand deliver? What is the value proposition for adoption or use? What provides the pay-off?
- What set of associations does the brand trigger? What connections are made, intentionally or collaterally, by the market and consumer? What body of messages are clustered through the delivery channels associated with the brand infosphere?
- What's the 'burn cycle' on the brand with the media and consumer attention?
  - ✍ Fad, 'cool,' consistent brand, cult brand, otaku
- How does the brand handle segmentation of the brand properties to address specific consumption demographics and have deep scale through a wide range of scope?

## PRESENTATION FORMAT OF 2C INTELLIGENCE PRODUCT

To encourage accessibility, continual and complete intelligence products use a military metaphor that emphasizes a clear and tight scope, which can stand independently for a mission, or be nested for constructing an entire campaign. The components of this template, called METT-T, includes:

- *Mission:* What is the intention, purpose, goals, mission definition?
- *Enemy:* What/who resists accomplishing the mission?
- *Terrain:* What is the comprehensive 'ground truth' about the context of the conflict and operations?
- *Troops:* What resources are available to accomplish the mission?
- *Timing:* What is the timeframe to achieve success within? What are the necessities of synchronization?

Using the "business as war" metaphor, the METT-T template can be readily applied to business using business terminology.

- *Mission & intent:* Vision statement, campaign goals
- *Area of operations:* Context, economy, marketplace; Effects on courses of action
- *Situation & state:* Assumptions and analysis; Effects on participants
- *Capabilities:* Range of potential options; Ability to accomplish
- *Courses of action:* Constraints, limitations; Dependency webs; Priorities; Probabilities
- *Conclusions & consequences:* Iteration; Exploitable opportunities created; Sequels and branches

The journalistic metaphor works as a pyramid– the sharp capstone providing the bare essential details or current situation, building out with each support layer into increasing levels of detail.

- *When*
  - Reality is a dynamic process, and time is a critical factor; since this is an iterative process, the initial report needs to provide coverage on the entire domain, but subsequent reports should concentrate on the information value– the differences that make a difference
  - Tempo and synchronization are critical– delivery of product to decision-makers to adequately approach decision points is essential. There are also factors of dependent timing– synchronization and coordination across elements and organizational aspects
  - Intelligence is perishable, and has a 'best used by' time attached
  - Looking at the product in context of maturity of the intelligence process lifecycle is worthwhile to enable a consumer to establish a value

- *Where*
  - What is/are the contexts? Areas of interest, areas of operations?
  - Scope and scale have significant impact on product
    - ✍ Resolution shifting is assumption shifting– the lower the resolution, the higher the abstraction, the greater the generalization

- It's difficult to maintain attention across wide domains, through deep levels of detail, and over significant periods of time– all of which are complicating factors that can lead to moral or material surprise
- Tempo creates certain tensions– extent of coverage, in either scope or scale, impacts on deliverables and detail; simplification to deliver inside the timeframe may be problematic
- Cross-domain or cross-context application of 'abstractions' or 'generalizations' are wisdom, from a cognitive science standpoint, but can also provide novelty in situations where that's a competitive advantage

?? *Who*
- Intentions and motivations
- Capabilities
- Organization
- Trust processes

?? *What*
- Context(s)
- Content– what's differentiated
- Constraints– limitations, options, dependencies
- Consequences– intended, unintended, collateral
- Decision cycles, tempo
- Baselines– what are the 'norms'– and information– what are the differences off the baseline that make a difference?

?? *How*
- Operational intention– For example: destroy, deplete, degrade, deny, disrupt, distract, deceive, subvert

- Discrete and continuous operations– tempo and meta-tempo
- Means and methods
- Priorities
- Scenario webs– sequels and branches

?? *Why*
- Fundamental, strategic, campaign, mission intentions
- Goals and desired consequences

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*Output from the cycle needs to structured so that it is usable to the consumer under the pressures of making informed decisions on a continual basis—don't make the decisions, provide the map and compass to navigate.*

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## MODELS OF CONTEXT: 2C INTELLIGENCE PRODUCT

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## WHAT IS 'CONTEXT'?

Contexts are 'containers' that have interaction 'rules'– environments, economies, etc.

?? The definition of a context is purely arbitrary– people make the decision that some 'point' is the boundary (borders, sets, logical types, etc.), and that information (the difference that makes a difference) is the distinction

?? Structurally, from a systems or holistic standpoint, the process of representing some structure as a context is artificial because the granularity severs connections and interactions, creating a limited 'web of connectivity' that is actually a microcosm separated out of the macrocosm

?? Context is continuous, but we make it discrete in order to discuss it, keeping the complexity under control; as previously discussed as flaws of the modeling process, the 3 Fs– freezing, flattening, and forgetting– help in making the model possible, but can introduce dangerous assumptions and distortion

?? Knowledge of these limitations is essential in order to construct and utilize contextual models in the intelligence and decision cycles, keeping an eye on 'indicators' that act as cues to shift to a tighter resolution (more information, less abstraction, fewer assumptions) or pull back to a broader perspective (less information, more abstraction, greater assumptions), in order to have appropriate and effective use

Contexts, environments, economies, ecosystems– whatever the name– contain entities, processes, interactions, and effects.

?? Content are what 'differentiate out' of the context– people make the distinctions on these things, but you could think of them as a sort of grammar specification (nouns, verbs, adjectives, etc.)

?? From an intelligence perspective on context, the immediate issues are what has influence, what influence does it have, and what can be influenced in the context or content
   o Effects may also be transformative– what is referred to in business as 'value added' (beneficial addition) or 'value subtracted' (detrimental, negative impact)

?? 2C intelligence explicitly includes deep analysis of the structure of the battlesphere (the physical space-time) and infosphere (the virtual, information environment) as part of the contextual models
   o Scope and scale are important to define well and clearly
   o Characteristics and consequences are difficult to contain inside discrete boundaries

?? 'Contextualization' essentially embeds the entity into the rules, processes, and assumptions of the context
   o This potentially sacrifices tempo and flexibility, so it's an important analysis point


**EXAMPLES OF SOME RELEVANT CONTEXTUAL FEATURES AND PROCESSES**

?? *'Rules':* Gregory Bateson's comments on the difference between react and respond are interesting here; 'react' is what a stone does when you kick it, and 'respond' is what a dog does. One is about physical rules, which are real, and the other is about behavior, which is not necessarily deterministic
?? *State:* The details of a 'static' view of the context
?? *Trust:* Who, in what role, and to what degree
?? *Climate, weather*
?? *Movement:* Movement 'uphill' is a divisor, movement 'downhill' is a multiplier– contextual factors and the interplay with an entity (such as the vector of motion) reinterpret a process
?? *Concealment & cover*
?? *Social structures and cultures*
?? *Demographics*
?? *Political economy*
?? *Infrastructure:* Support systems that provide an economy of scale
?? *Organization*
?? *Risks (passive), threats (active), and force majeure (event-driven):* Alpha, beta, and omega– required (exposure), discretionary (vulnerability), inevitability

**EMERGENCE**

Something not generally appreciated in common knowledge is exactly how and why 'difference encourages more difference'– complexity increases and there's a whole field of study called 'emergence' that's examining it, but it applies to fields as seemingly disparate as evolutionary biology (evolution and natural selection) and conflict management ("no plan survives contact").

?? Information, differences that make a difference, come about (emerge) from interactions– constraints (like rules, control points, or even observation/attention) and relationships– and this 'cascades'

?? The Carnot cycle, simple thermodynamic engines, provides an example– heat exchange, exchange of molecular energy, is the 'motive force' behind an engine, which requires a source of difference (the 'heat sink')
- o Take away the heat sink, or equalize it with the heat source, and the engine ceases to function (which is why a radiator is essential to an automobile)
- o Heat exchange is a cascade– heat keeps getting transferred among molecules, dissipating out
- o In biological systems, the heat death of the Sun radiates out into space, feeds plants on earth, which use the differential to produce chemical energy (photosynthesis), which helps to start a food web (being eaten by herbivores which are themselves eaten and so on; or dying and rotting, feeding the microcosmic food web)– everything is lunch for something else
- o The same applies to the information cycle– the difference cascade expands out, even more rapidly with increased novelty and density as factors

**REPRESENTATIONS OF CONTEXTUAL PROCESSES**

It's worth considering the 'mapping' of elements that may be congruous or isomorphic in such a way that they provide for rapid usability.

?? *Heat*
- o As in the Carnot cycle, heat or molecular motion and exchange maps nicely onto many elements of contexts
  - ✍ Motion
  - ✍ Activity
  - ✍ Difference
  - ✍ Traffic
- o Use of heat cascades into associated mapping aspects
  - ✍ Resistance
  - ✍ Conductance
?? *Structure*
- o 'State,' such as solid, liquid, or gas, can translate into organizational analysis tools
  - ✍ Flexibility
  - ✍ Embeddedness
  - ✍ Permeability
  - ✍ Resilience

*Context is the setting that people, places, and things reside, interact with each other, and generate effects or transformation within.*

## WHAT IS 'CONTENT'?

Content is what context 'contains,' which may itself be context. Content may be entities, interactions, roles/niches, or processes/threads.

?? *Entities:* Entities cross the spectrum from individuals through large-scale organizations. Entities have state and behavior. While it might seem odd to think of a large-scale organization as a singular entity, organizations can take on a behavior of their own– corporations, markets, countries, etc. Entities can have an ordered spectrum of relationships to yourself– support, friendly, swing, opposition, hostile/adversarial, unknown/other. Depending on the level of abstraction, 2C intelligence builds out models of the 'Ds'
  o Differing resolution of scope and scale
  o Density
  o Distribution
  o Demographics and details
      ✍ Intentions and goals
      ✍ Organizational structure
      ✍ Loyalties, discipline, dedication, political sympathies
      ✍ Infrastructure– enabling economy of scale– including: physical, infostructure, social contract, governance, markets (formal, grey, black), and 'para' organizations (arbitration, police, military, governance, etc.)
      ✍ Ethnic division, religion
      ✍ Language, linguistic structures
      ✍ Hazards

?? *Entity-to-entity interaction– relationships*
  o Links, ties, couplings– frequency, strength, direction
  o Networks
  o Webs

?? *Entity-to-environment interaction: roles & niches*
  o Transformations and 'services provided' by existing in the context
  o Increasing complexity, expanding differentiation, constrained by fitness testing (natural selection)

?? *Interaction-as-entity: flow, transformation, and 'use'*
  o Processes (individual) and threads (connected stream, perhaps across multiple entities/contexts)
  o In a workflow or process, this would be like following the paperwork, or the object transformed, using that perspective, rather than the workflow or transforming actors/entities
  o Will, intent
  o Decision processes– impact on tempo and meta-tempo; vulnerability of the decision process
  o Cycle v. event driven– cycle: continuous; event: triggered by something discrete
  o Strategy & tactics
  o Interaction & dependency

## COMPETITIVE 2C INTELLIGENCE: MODELS OF 'US' AND 'THEM'

When building models of content, among the most important models to build are those of yourself ('us') and those of your opposition or adversary ('them').

**ELEMENTS COMMON TO MODELS OF BOTH 'US' AND 'THEM'**

- *Contexts, environments, markets, ecosystems*– if you don't have something in common that you're competing over, then the competition is illusory
- *Intentions, goals*
- *Capabilities, training, status*
- *Knowledgemap*– data, information, knowledge, wisdom, where it resides (technology, human capital)
- *Command/coordination*
- *Relationships*– entities, contexts, threads
- *Organization*
    - Composition– elements
    - Disposition– attitude, arrangement
    - Strength, manpower
- *Tactics, modus operandi, standard operating procedure*
- *Logistics, support, position/lines*
- *Appropriateness*
- *Effectiveness*

**MODELS OF SELF**

- *Know thyself*
    - You need to have brutal honesty about yourself
    - Delusion creates opportunity– for your opponents/adversaries

- *Create models using internal quantification and qualification*
    - Assessment of capabilities and intentions

- *Create models using external sourcing*
    - What do you look like to others?
    - Will you be underestimated, overestimated, or accurately modeled?
- *What are the consequences of the self-modeling process?*
    - Do others have better models of you than you yourself operate from?
    - Do you recognize your strengths and weaknesses, and do you understand what to do regarding them?
    - Take active measures– intelligence, counter-intelligence, etc.
        - Perception management is critical. Expectations are inside of your control
        - Is it better to be feared or loved?

**MODELS OF THE COMPETITION, OPPOSITION, ADVERSARY**

- *Be aware of who you define & how*
    - There are cases where the viewpoint and approach you take with other players ends up defining their role relative to you– convictions make convicts, so you might not be able to win their 'hearts and minds' once you label and act regarding them
    - Always check your model-to-reality congruity
- *Primary importance are intentions* (what do they have the will to do) and *capabilities* (what courses of action are possible for them)
- *Patterns of behavior and operations*
- *Doctrine*
- *Decision process*
    - What's their view of the world?
    - How do they generate courses of action, options?
    - Who makes decisions how?
    - Who carries decisions out?
    - Do they have the initiative, are they responsive, or do they just react?

- o Meta-decisions
  - ✍ Sustainment
  - ✍ Assurance
  - ✍ Appropriateness
  - ✍ Effectiveness

## COMPETITIVE ANALYSIS TEMPLATE

- ?? How do they operate under normal conditions?
- ?? What are their ranges of behavior?
- ?? What is their normal doctrine, organization, support/resource base/network, strategy & tactics, techniques (means & methods), procedures?
- ?? Do they have a typical approach?
- ?? What do they pay attention to, or target?
- ?? What's their deployment pattern and disposition?
- ?? How do they utilize resources?
- ?? Do they have a 'standard operating procedure' and what are the variances off the baseline?
- ?? What's their tasking process? Who does what where, on what timeframe, with what methodology, and under what direction?
- ?? Do they have consistent patterns? Tasks, organization, timing, relationships, groupings, usage, etc.? Or do those 'emerge' with circumstance?
- ?? Who has command or authority? Are they linked with responsibility?
- ?? What is the normal presentation and penetration? Front, depth, flanks, boundaries, engagement areas, objective depths, control measures, etc.
- ?? What are the scope and scale of their decision cycle? Courses of action, strategy & tactics, scenarios, sequels (what they do when they succeed), branches (what they do when they fail), preferences
- ?? Timelines, synchronization, phases, transitions
- ?? Dependencies

> *Thinking about your courses of action vis-à-vis targets needs to be informed with competitive models in order to calculate payoff, risk/return, minimax, optimax, and dependency cascades (direct, collateral).*

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## MODELS OF CONSTRAINTS: 2C INTELLIGENCE PRODUCT

Knowing and understanding the constraints in a context is crucial to knowing real and perceived restrictions on behavior and operations.

- ?? *Contextual constraints*– those imposed by the context, environment, ecosystem, etc. itself
  - o Rules, physical laws
  - o 'Rules of engagement'
    - ✍ Operations in a context– battlesphere, market, region– may very well have imposed structures that constrain behavior and action; selective or flagrant violation of these rules or laws can be the dividing line between 'good' and 'evil,' not to mention what separates intelligence from espionage

- ?? *Governors*
  - o In a cybernetic sense, a governor is a model that has a direct congruity to an element or elements, which is used as part of a control system; a thermostat is a model of the overall temperature, which is constrained or 'collared' by a heating/cooling system

- o "As above, so below"– manipulation of the model is a way to subvert the control system

?? *Limits*
- o Physical limitations can be difficult to overcome– resources like time, capital, manpower may be severe restrictions
- o Processes have limits– scale and scope, (dis)economies, coordination/control
- o Intelligence or knowledgebase are critical limits– overrunning your intelligence is entering the 'fog of war'

?? *Dependencies*
- o No man is an island– from the essentials of Maslow's Hierarchy of Needs, to the language or knowledgeware you use to think, to your position in the value web of the political economy, you've got dependencies. Do you recognize them as such, or take them for granted?
- o Coordinated timing is a 'situational' constraint– synchronization of effort

?? *Embeddedness*
- o Tight couplings or connections can be significant limitations
  - ✍ 'Paradigms' in the Kuhnian sense mean being 'viewpoint' embedded, a loss of flexibility to think 'outside the box'
  - ✍ Location embeddedness is a loss of mobility
  - ✍ Large or bureaucratic organizations become structurally embedded– decreasing ability to regroup, reshape, reform to meet contextual change
  - ✍ 'Approach' or capability embeddedness translates to "if you do what you've always done, you'll get what you always got"

?? *Decision criteria*
- o The support structure for the decision cycle affects appropriateness, effectiveness, assurance, and sustainment (what can be thought of as 'meta-tempo')
- o This includes a mixed-bag of things that may or may not be within the scope of the intelligence function
  - ✍ Strategy & tactics
  - ✍ Courses of action, options
  - ✍ Decision points

## DECISION PROCESSES—THE BOYD CYCLE

Colonel John Boyd was a fighter pilot in Korea. Boyd survived (to his surprise) a dogfight in Korea where he went from pursued to pursuer. Figuring out why he survived would save his and fellow pilots' lives in the future. Analysis of his aircraft, enemy aircraft, his experience, and that of fellow pilots yielded an answer. His aircraft had better apertures for visibility, and could respond to maneuvers more rapidly than that of the enemy. Boyd, therefore, could see what was going on better and more continually, and he could respond to situations and change those situations more rapidly and effectively. Boyd's discovery went to create the F-16 fighter, but also the Boyd Cycle.

?? *Orientation-Observation-Decision-Action (OODA)*
- o OODA is a cycling loop, and the speed or tempo of the cycle is what leads to improved effectiveness
- o The OODA loop and tempo aren't just for fighter pilots, but for any modern business as well

?? *The Boyd Cycle*
- o Boyd cycle is a behavior process
- o Time competitive, survive/thrive in confusion, excellence in technique
  - ✍ Nested/embedded loops
- o There is no OODA loop unless a situation is dynamic
  - ✍ Event driven vs. cycle/interrupt driven
  - ✍ Deltas/differences are what attract attention

- ?? *Observe*
  - o Being there, at the point; ground truth; degrades static models
  - o Having a proxy (implication: trust, communication)
  - o Requires ability and capability; training; control
  - o Processed involved: perception, perspective
  - o Creates data; context/content

- ?? *Orient*
  - o Categorization: who, what, where, states, relationships
  - o Requires familiarity, experience
  - o Processes involved: distinctions, discrimination, drawing boundaries, attention (process: creates flanks, rear)
  - o Creates information; content/context
    - ✍ Cues/deltas
  - o Context shifts, tempo shifts (turnover rate), etc.
  - o Proxies: GPS, IFF

- ?? *Mental Models—Observe/Orient*
  - o Dynamic, versatile, scalable
  - o Pro-active: probe and discover
  - o Minute detail, expansion to constraints/limits
  - o Representation and the thing represented
  - o Paradigm: filter, bias, assumptions
  - o Know nothing, have no assumptions, have modes
    - ✍ 'Things I know' accumulate, block the dynamic process
  - o Complexity: specialization, patterned behavior, predictable
  - o Questions (dynamic) are more important than answers (static), define boundaries

- ?? *Decide*
  - o Requires judgment: when, how, why
  - o Processes involved: training, experience, talent/ability
  - o Creates knowledge/wisdom; constraint/consequence
  - o Proxies: 'pass it up'— management, command and control
- ?? *Act*
  - o Requires: ability, capability, training
  - o Consequence/constraint
  - o May be 'act' or 'react'
  - o Act: initiative, you're the threat
  - o React: survive, turn the loop back to act
  - o React v. respond

- ?? *OODA observations*
  - o OOD: reflective, cognitive
  - o A: reflexive
  - o Planning, training, simulation can create significant improvement
    - ✍ Think/play as much out in advance
    - ✍ 'Pre-process'— reflective becomes reflexive
  - o Dependency is a significant exposure in the Boyd Cycle
    - ✍ Boyd Cycle is hierarchical, ordered
    - ✍ Errors/flaws cascade
    - ✍ The Boyd Cycle can be turned around and used to conceptualize attacks on your opposition/adversary
    - ✍ See the Boyd Matrix discussion further below

**SUPPORTING THE DECISION-MAKER'S DECISION CYCLE WITH 2C INTELLIGENCE**

Taking active measures to support the decision cycle means providing timely and accurate models to inform the decision maker, who can then generate or select among the numerous potential 'paths.'

- *Courses of Action (COA), options, turns*
    - Those involved in the intelligence process need a basic framework for COA models that augment the decision-maker; picking the right interface or metaphor is essential for usefulness
    - Ecological, biological approach
        - Co-exist or compete
        - Some dine, others are dinner
    - Conflict— competitive options
        - Attack
        - Defend
        - Reinforce
        - Retrograde/retreat

- *Developing COAs*
    - Capabilities/Intentions— know thyself
    - Opportunities— seize the day
    - Intelligence— 2C models
    - Simulations— 'play' it through in advance
        - See the models of consequences discussion further below
    - Dependencies, thresholds, tolerances

- *Models of 'opponent' COAs*
    - Likely objective, desired end state
    - Comprehensive set of their available options
    - Evaluate and prioritize their potential COAs in accord with their intentions and capabilities
    - Provide COA details in time available for your own decision points— the decision-makers need to know what they might be facing
    - Task collection/intelligence requirements on a 2C basis

- *COA indicators and signatures*
    - There may be indicators or 'signatures' as to which COAs have been decided upon— from your opponent, or that you betray; this is a critical reason for tactical intelligence, as well as active deception campaigns
    - Simulations and scenarios are critical to develop these intelligence databases

- *COA dependencies*
    - Decision trees are fuzzy networks, with sequels and branches, and committed courses of action require commitment to support and sustain

> *Constraints are particularly troublesome to handle in the intelligence cycle—emergent processes, intangible restrictions, coupling with the decision cycle itself, trying to be creative and effective— these and more are what separate out the professionals from the amateurs, the experienced from the dead.*

**MODELS OF CONSEQUENCES: 2C INTELLIGENCE PRODUCT**

Actions have consequences– direct and collateral effects of decisions and actions taken, forming an emerging web of potential decision points and courses of action along sequels (paths to capitalize on success or seize opportunities created) and branches (paths to manage crises, mitigate damage, and regain the initiative). These can be formulated in real-time, but that's a critical failure of the 2C intelligence process; integral to the product are forward-looking models, as well as scenarios (positing potential contexts, contents, constraints) and simulations (active exploration of scenarios, with an eye on decision points, courses of action, sequels, branches, etc.).

?? *Why conduct simulations of scenarios?*
- Shared models: simulations establish a common space of language, terms, symbols, concepts, etc. that act as cognitive tools for thinking about and enhancing communication about the context, content, constraints, and consequences. The process of interaction also initiates an emergent process much like what occurs in real situations
- Planning: they're active models, providing dynamic and emergent webs of effects, rather than 'set piece' games; this allows an active exploration of the battlesphere and infosphere in a human-centered process, because ultimately it is individuals and organizations that make the decisions and are the intended targets
- Training: performance improves as participants move initially from 'reflective' cognitive spaces (having the luxury of time to think and consider) to 'reflexive' spaces (knowing how to lead or manage in high-pressure real-time contexts/situations)
- Familiarity and calibration: whether virtual ('game room') or real (field exercises), simulations provide metrics essential to the overall process– who can handle what, how quickly, with what support, etc.
- Consequence-free exploration: it's essential, in a comprehensive exploration of potential webs of any sort, to have the freedom to make mistakes, which means the ability to try most anything but stripped of actual consequences. Too tightly constrained behavior severely limits novelty and creativity, critical factors in surprise and keeping an opponent off-balance
- Anticipate the potentials: exploration of various scenarios, branches, and sequels, if done with some observation and introspection, can generate a database of indicators and signatures; while not purely deterministic or 'cause-and-effect,' the real world and real situations demanding intelligence can be better explored if details and models can be related to what they may potentially mean, and if those paths have been (and are continually) well-explored and simulated forward
- Map COAs: given the variations of parameters in scenario simulations, what are the COAs available to your decision-makers and those of the opposition? What are the strengths and weaknesses of options, the probabilities of success? What should the priorities be?
  - Decision points for various COAs can be explored and analyzed
    - ?? Knowledgeware and intelligence requirements
    - ?? Sequels and branches
    - ?? Dependencies– conditions and resources
    - ?? Coordination requirements– synchronization
    - ?? Consequences– exposures and vulnerabilities, opportunities created
- Tasking: what's necessary to make scenarios legitimate in the real world?
  - Requirements
  - Intelligence tasking
  - Anticipatory planning, logistics, maneuvers, etc.
  - Targeting: acquisition, selection standards, process of attack, assessing effectiveness

?? *Divergent and convergent models*
- Scenarios and simulations provide a better potential for comprehension of an expansion– what scope and scale requires attention for the decision-maker, and thus intelligence product to support?

Inside a potential cognitive space, models of consequences are essential to a decision-maker in reducing the array of intelligence product, COAs, networks of sequels and branches, and the exhaustive material produced by a competent intelligence process, and coming to a conclusion– which is, after all, the entire point.

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## THE BOYD MATRIX: FAILURES IN THE DECISION CYCLE

The Boyd Cycle or OODA loop is not just a good cognitive tool to think about the decision cycle, it can also be 'turned around' and used to understand a conflict: to assess an adversary; as an aid in targeting, strategies, and tactics; or even as an assessment of meta-tempo (the tempo of tempo changes– appropriateness, effectiveness, assurance, sustainment) and operational metrics (such as 'battle damage assessments').

- ?? *OODA:* four steps, 16 possible combinations if a binary flag is used to indicate a flaw, degradation, delay, or subversion of each element; decompose the Cycle, thinking of each part as a target– this is the Boyd Matrix

- ?? *Boyd0 (0000)*
    - o Optimal
    - o At the front, or as good as (leadership)
    - o Known, familiar sitrep (situation report; in this sense, the context is familiar, and the 'state' of the context is one in which the decision-maker and other participants are experienced– note that this itself can be a potential drawback, in case the isomorphism between the 'current' and 'prior' contexts is inaccurate)
    - o Opportunity to be made or taken
    - o Able/capable of acting (trained, equipped)

- ?? *Boyd8 (1000)*
    - o Observe 'failure'
        - ✍ Management/command remoteness, intelligence failure, overrun information, proxy/communication failure, fog of war, etc.
    - o Issues/Attacks
        - ✍ Fog, attention, disorder, denial, trust failure, targeted intelligence or information, deception (mask of the common/mundane to conceal; camouflage), etc.
    - o Cascades O => ODA

- ?? *Boyd4 (0100)*
    - o Orient 'failure'
        - ✍ Boyd8, disorder, denial, trust failure, deception, confusion, etc.
    - o Issues/Attacks
        - ✍ Out of depth, command and control failure, failure of tools, communication down, subversion/deception/denial, panic, guerrilla warfare (attack where attention isn't), etc.
    - o Cascades OO => DA

- ?? *Boyd2 (0010)*
    - o Decision/judgment 'failure'
        - ✍ Boyd8, Boyd4, inherent management drawback, trust failure, inexperience, novel sitrep, etc.
    - o Issues/Attacks
        - ✍ Subversion, larger IWAR campaign, maneuver, assassination, deception (fashioning of illusion to achieve real aims), etc.
    - o Cascades OOD => A

- ?? *Boyd1 (0001)*
    - o Action 'failure'

&#x270d; Boyd8, Boyd4, Boyd2, friction, denial, trust failure, etc.
- o Issues/Attacks
    - &#x270d; Denial, subversion, attrition, etc.

## SOME ADDITIONAL APPLICATIONS OF THE BOYD MATRIX

The Boyd Matrix can be used to classify a conflict spectrum according to where it targets the OODA loop. Use of the Boyd Matrix is also indicative of the advantages and disadvantages of leadership-driven decisions cycles as opposed to management-driven. In information operations and infrastructural warfare, the Boyd Matrix creates a map between infrastructure and the aspect of the decision cycle it supports or for which it provides economy of scale.

- ?? *Boyd Matrix observations: war is hell*
    - o Boyd2 (0010): maneuver, assassination
    - o Boyd3 (0011): management/command failure
    - o Boyd4 (0100): guerrilla warfare
    - o Boyd6 (0110): terrorism
    - o Boyd7 (0111): polwar
    - o Boyd9 (1001): attrition
    - o Boyd12 (1100): psyops/propaganda
    - o Boyd14 (1110): psyops
    - o Boyd15 (1111): WMD, infowar potential

- ?? *Boyd Matrix further observations*
    - o That's what we do to them, what about us?
    - o Qualitative issues
    - o Leading vs. Managing (command)
        - &#x270d; Lead: initiative, opportunity, willing to be responsible
            - ?? 0100/0101: perspective issues, might not be leveraged
        - &#x270d; Manage: judgment, investment in being/seeming 'right'
            - ?? 1010/1011: proxies, need to be 'right,' trust failures

- ?? *Boyd and political economy*
    - o Context shifting
    - o Society 'hacking'
        - &#x270d; Will, social contract, training, proxies, decision tools, denial/subversion
    - o Boyd15 (1111): communications, infostructure
    - o Boyd14 (1110): media
    - o Boyd13 (1101): power, air/rail/public transportation, bridges/tunnels
    - o Boyd9 (1001): fuel
    - o Boyd3 (0011): schools, spiritual, EMS, government/administrative
    - o Boyd1 (0001): water, business/economy, financial (banks, markets, etc.)

## SOCIOLOGY, EMBEDDEDNESS, POLITICAL ECONOMY, AND THE BOYD MATRIX

Using the Boyd Cycle and Matrix, it becomes evident why the 'outsider,' the disembedded, and the 'rebels' have an edge– better responsiveness, greater flexibility, and a higher potential for information sharing (or, even within 'compartmentalized' organizations, the probability of having local knowledge to handle local decisions is higher). The tools also provide insight into assumptions and intentions in conflict, as well as cross-over application into a 'business as war' approach to political economy, and models of content for 2C intelligence products.

- ?? *Boyd, Individuals/Society, Mistakes, Options*
    - o Have to feel and be free to act; no 'hesitation' or resistance
    - o Proscribed behavior vs. forgiveness
        - &#x270d; It's easier to ask for forgiveness than permission
    - o Freedom is higher tempo

- ✍ Options not precluded, progress is continual
  - o Organizational dependency/hierarchy
    - ✍ Control of information, knowledge, privilege, approval– command & control slows down tempo, and provides less knowledgeware to apply to decisions and problem-solving
  - o Capitalism vs. Communism
    - ✍ Use of 'free energy' (profit) for new options (risk) or in 'to each according to their need' (which ties up resources along approved paths, rather than creating new options)

?? *OODA: Effect of Assumptions*
  - o Active/Defense: assume hostile; defense-in-depth (where depth is a process)
  - o Passive/Defense: assume friendly; Boyd15 (1111)
  - o Active/Offense: threat/use of force; attack-in-depth; Boyd0 (0000)
  - o Passive/Offense: withdraw/subvert dependency; tempo is considered, deliberate; IWAR

?? *Boyd Matrix and Competitive Analysis*
  - o Boyd8 (1000): out of touch with market, consumer
  - o Boyd4 (0100): misunderstands the market, consumer, trends; looking in wrong place
  - o Boyd2 (0010): can't decide how to cope/meet the market/consumer demand
  - o Boyd1 (0001): unable to implement

?? *Boyd Matrix and Communication Difficulties*
  - o Boyd8 (1000): not in the channel, not part of the communication path
  - o Boyd4 (0100): not paying attention, missing the point
  - o Boyd2 (0010): doesn't know what to say, can't decide right/wrong communication
  - o Boyd1 (0001): incapable of communicating; inappropriate response; no response

**THE CLIENT**

The client was a well-established futurist think-tank seeking:

?? Clarity of approach in the mission and objectives of the organization
?? A process to keep current with political, economic, technologic, and other futuristic trends
?? Understanding of sourcing and recognition of what's valuable and what's trivia
?? A rigor to perform analysis
?? Mechanisms to apply their experts and resource network in the think-tank mission
?? Reduction to 'product' and presentation

**THE SOLUTION**

Customized application of the 2C intelligence process– part of the briefing to the client

?? *Direction & tasking*
- o Follow a 'connectionist' approach rather than compartmentalized; don't inherit the limitations of legacy intelligence systems and 'buy in' to restrictions that directly impact on the data-information-knowledge-wisdom transformation (a cognitive science process) by keeping disciplines apart. A great advantage of the private sector in intelligence matters is free association, on many levels

- o Diverge and converge in the contexts and content you're tracking
  - ✍ Trends– run them forward, but don't get trapped in thinking continuity endures
  - ✍ Connections– what relates to what
  - ✍ Shifts– transformational events, breakthroughs, wildcards, etc.
  - ✍ Novelty– stray outside the normal domains, it keeps your people, perspective, and information fresh

?? *Tasking & collection*
- o Perform 'rapid prototypes' on your intelligence products
  - ✍ A high resolution or granularity on your decision points while running the intelligence cycle will make you much more responsive
  - ✍ Feedback is essential in making prototyping work– tightly couple your producer-consumer relationships at this stage if you have them specialized (and reconsider that specialization– have everyone produce product and distribute it out, it gives them an appreciation for what it takes, extends awareness of who does what in the organization, and creates and distributes digital knowledgeware that adds value to the organization)

- o Produce the entire spectrum, from current reporting through in-depth coverage with value-add from your domain experts
  - ✍ Sourcing needs to range from open sources (OSINT) through developed sources and analysis
  - ✍ Don't feel limited in scale or scope on sourcing, and if you can staff it, run parallel tracks– one handling wide scope, opportunistic intelligence collection, and another running deep into domains
  - ✍ Wide scope may be automated or handled by more 'entry level' personnel, but in-depth efforts need to be spearheaded by an analyst or domain expert (which can be 'grown' from entry-level staff over time)

- o Build a 'common pool' or 'community memory' of intelligence material– so that all staff can contribute and tap in to what has been gathered or collected from all sources
  - ✍ This common pool approach is critical to later phases– one of the classic failures of intelligence is "you don't know what you don't know," and having review from outside a domain or cross-domain is what can push new associations or breakthroughs

?? *Collection & processing*
- o Index all content files for rapid search and easy access
  - ✍ Categorization and filtering are fundamental to the 'data becomes information' transformation

- o Meta-tag all content files
  - ✍ Levels of abstraction or content that is 'isomorphic'– underlying mechanisms are the very similar even if not obvious at first
  - ✍ Connections that can be made cross-domain that aren't apparent in the content or index terms– this is fundamental to the 'information becomes knowledge becomes wisdom' transformation

- o While indexing can be automated, only the human element (for now) can provide cross-domain associations, or provide an analytical look not directly in the area of specialty
  - ✍ 'Complexity forces specialization,' which has created large, isolated domains that seem orthogonal, but actually share similar mechanisms, constraints, traits, or lessons to be learned

- o Current reporting is looking for 'situation reporting' or 'state of the world' as well as areas for deeper investigation and a 'novelty check' (to see what areas are being missed in more detailed coverage)

- o In-depth, comprehensive coverage is looking for implications, meaning, consequences– and these are not always best generated by domain experts
  - ✍ Look for high levels of novelty– always something new or a new approach
  - ✍ Emergence occurs through interaction, so keep the communication vibrant
  - ✍ Seek applications, similarities, connections
  - ✍ Attempt to articulate what is being discussed– the act of explaining or describing, particularly to lay-people, is helpful
  - ✍ Try to make the materials accessible, and try to find metaphors or 'interface' mechanisms that encourage understanding, they're gateways to use of intelligence
  - ✍ Nothing is ever complete, nothing is ever finished
  - ✍ Breakthroughs happen!
    - ?? "Things I know" get in the way
    - ?? Question your assumptions
    - ?? Questions are where you ran out of answers, answers are where you ran out of questions

?? *Processing & analysis*
- o Reduce the gathered and collected material to product
- o What's the timeline of the decision points? Make sure to deliver what's needed inside that timeframe
- o The models are critical to inform decision-makers
  - ✍ Divergent products get a handle on the scope of the issues; convergent products help create or select among options
- o Depending on the structure of the organization and the intelligence effort, it is very useful to follow the rapid prototype strategy with the decision-makers, and deliver intelligence product at every step of the process
  - ✍ Provide the essentials and build-out or aggregate as you go
- o Map the product into multiple potential mechanisms for navigation, presentation, and display

- FAQ or journalism approaches work for rapid access– get the basics and critical points up front
- Providing links back to the 'common pool' or original sourcing allows consumers to 'reality check' on the product, and provide additional value and feedback
- Product should expand into increasing levels of detail: from 'lite' with just the essentials, to a more 'executive summary' version, and then into detailed reporting, followed by supporting documentation
- A per-interest-domain internal portal on the local intranet is very helpful; it provides a fast overview of sourcing, the mechanism for regular pulling of content, and a way for consumers with varying level of knowledge to pursue independent research cycles
- Human interaction is a must, even if only supported through virtual channels
  - A useful way of thinking about this is process, representation, and structure
    - Process can be the physical rules of reality
    - Representation might be a simple machine, like a cog, that embodies certain processes
    - Structure is how the different cogs interact, making simple machines, which interact to make more complex machines, and so on

?? *Analysis & distribution*
  - A picture is worth a thousand words
  - A word is worth a thousand pictures
  - Communication needs to support both the objective and symbolic, as well as the subjective and evocative
  - Consumers need to be able to access the intelligence product, use it to make decisions, and be effective; they'll have invaluable feedback along these lines, so listen to them, and integrate it back into the cycles
  - Delivery needs support from both a technical and human network; don't favor one over the other, but if you do, opt for the human element
  - There is no 'final' product
    - Everything is a verb, the world is dynamic
    - Models in the product will fall out of step unless maintained with a tempo of your cycle faster than the rate of change in the domain
    - The more decision points, the more potential for interaction between the consumer and the cycle, and the greater the ability to make corrections or change direction
  - Watch your intellectual property boundaries
    - Internal or long-term relationships can be tightly coupled to the cycle
    - External or short-term relationships should be loosely coupled to the cycle

?? *Sourcing—where to look*
  - Everywhere– it's hard to make an argument that being under-informed is beneficial
  - Public sources contain surprising amounts of value, particularly if you can 'connect the dots' and build comprehensive models
  - Net-based Open Source Intelligence (NOSI) and the Internet are increasingly helpful, but have their own pitfalls
  - Human intelligence and networks of contacts are still the best source of intelligence– they're interactive, so you can ask about things they aren't volunteering; best of all, they can tell you about intentions, and what's going on in their head
  - Look for isomorphs– people, places, things, events, etc. that are similar; you can learn a great deal, as long as you remember that the "map is not the territory, the menu is not the meal, the symbol is not the thing symbolized"

?? *Things to remember in the daily process*
  - Continual collection at every level of the organization
  - The level of involvement of personnel is scalable, since 'real work' does need to get done, but even 'brush contact' level involvement is better than none
  - Sharing and usage of the 'common pool' is critical to complete access throughout the organization

- o Keep the tempo extremely high, and decision point resolution as comprehensive as you can
- o Remember: process, representation, structure

?? *Using the experts and resources available*
- o They're great 'tripwires' regarding important developments or things to pay attention to
- o They've got their own network to utilize for your gathering/collection efforts
- o Don't just ask for their judgment on their own domain, stray outside as much as they'll let you– it keeps them fresh and informed, and they can make cross-domain connections to your benefit
- o In-depth processing and analysis can be greatly bootstrapped and improved by their involvement– if you know a subject matter, you already know where to look (just beware the potentially narrow or closed mind)
- o Use them in delivery
    - ✍ Testing the product to make sure it's accurate and effective
    - ✍ Human presentation of knowledgeware can get the point across when written documentation can't seem to make an impact
    - ✍ Setting an appropriate resolution of decision points can be guided by those immersed in a domain– they can help map or make sense of the rate of change

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## ABOUT THE AUTHOR

With 20 years experience defense, intelligence, information operations, corporate finance, and technology development, Michael Wilson consults on matters of organizational safety and security, critical infrastructure protection, information security and assurance, intelligence, finance, and technology for multinationals and governments in Europe, Asia, North and South America, and the Middle East. As a pioneer and acknowledged leader in the fields of infrastructural defense, information operations, open-source and next-generation intelligence, Mr. Wilson is the winner of numerous awards, including the US National Defense University's Sun Tzu Award in 1997, and the G2I Intelligence Professional Award for both 1997 and 1998. In corporate finance, he structured multi-billion dollar merger and acquisition transactions for multinational clients. As a technology inventor, his inventions and development of various technologies include: computer security systems, anti-viral computer hardware, cryptographic methods, agent-based modeling, three-dimensional visualization and interfaces, and massively-parallel, massively-distributed processing systems. Mr. Wilson's educational background is in system theory, cybernetics, and general semantics, PERL (political science, economics, rhetoric, law), and physics. He can be contacted via email at info@metatempo.com.