Design: The Modern and Postmodern Divide
Considerations on a Second Generation
Design Model for Future Militaries

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Three War Movements Framed for a Design Discussion

Limited Wars
Rules-based
Oral/tacit knowledge transfer
Mechanical, linear
Simplification (cause=effect)

Attrition-based Total War
Military Science
Professionalization (academies)
Engineering, reductionist
Complicated (cause and effects)

Asymmetric
Emergent
Critical Reflection
Complex/Chaotic
Dynamic Change

Classical Military Movement
(antiquities through late 1600s-1800s)

Strategic intent, order of battle, and tactical directions; no formal military education or academies; no doctrine; learning through apprentice and mentors.

Modern Military Movement
(1800-1990s)

Wars required an ‘operational level’ due to time/space and technology. Few conflicts resolved in single battles. War had a blend of modern and classical qualities; increased complexity.

Post-Modernist Military Period
(2000+)

Wars no longer adhere to modernist processes exclusively. Greater paradox, complexity, emergence; non-state entities and networks challenge traditions.

Wars could be started and potentially concluded within a single battle, or across a series of localized battles. Larger conflicts still had tactical battles isolated in time and space.

Figure 1: Framing Pre-Industrial, Industrial, and Post-Industrial Frames for War
Figure 2: Naveh’s Original Systemic Operational Design as used by the IDF (2000-2005)

System Framing

Rival as Rationale

Logistics as Rationale  Command as Rationale

Operation Framing

Operational Effects

Forms of Function
“Three Ball Chart” simplifies Naveh’s SOD depicted in Figure 2
IDF’s elements of ‘rationale’ removed, with frames adhering to system thinking and analytic processes (objectivity) as offered in ‘Commander’s Appreciation and Campaign Design’ and other Army doctrine
Maintains ‘sensemaking, idea making, decision making’ logic that underpins ADM’s efforts to generate new solution sets
Figure 4: Australian Adaptive Campaigning Concept and John Boyd’s OODA Loop

Adaptive Action graphic source: http://resilienceandsecurity.blogspot.com/2012/05/could-this-be-resilience-cycle-or-just.html

Boyd’s OODA Loop (circa 1980s-1990s) adapted into Joint Doctrine

Figure 5: Stanford Design Methodology, ADDIE and AGILE models for Civilian Design

**ADDIE Model:**
- **Analysis:** Needs Assessment, Learner/Task/Context Analysis
- **Design:** Strategize Selection, Tactics Determinations
- **Develop:** Prototype, Creation of Instruction
- **Implement:** Formative, Summative
- **Evaluate:**

**AGILE Model:**
- START
- Initiate Project, Define Requirements
- Develop: Sprint, User Stories, Backlog, Adjustable & Flexible
- Integrate & Test
- Continuous Visibility, Teamwork
- Release to Market

Graphic source for AGILE model: https://dreamztech.com/tag/agile-model/
Figure 6: SOD Versions 2 and 3

**SOD Version 2 (~2006-2013)**

“SDI” - Theory about Theory

- **System Framing**
  - Legacy
  - Current
  - Desired
  - Drawback
  - Drift
  - Potential
  - T4
  - Initial Strategy

**Opposition System**

- Cognitive Transition
- Conditions

**Operation Framing**

- Aesthetics
- Configuration

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**SOD Version 3 (2013-present)**

“Z-Pattern” or “Disruptive Thinking”

- Complex
- Emergence

- Understanding System

- Strategic System
- Operation System

1. Understanding System
2. Opposition System
3. Strategic System
4. Operation System
Figure 7: First and Second Generation Design Models

**First Generation Design**

- Attempts non-linear; in practice becomes linear (and iterative)
- Design “reframe” rebuilds the content, but *not the design form*
- Design begins and ends with clear iterations that are susceptible to institutionalisms (planning)
- Displacement of concepts interrupted by dominant paradigm imposing doctrine, shared lexicon, and other institutional concepts
- Reverse engineering remains implicit
- Goal-centric strategy prevents emergent design from occurring

**Second Generation Design**

- Emergence built into methodology as well as epistemology
- Nonlinear; with no start or end prescribed
- Notion of ‘drift’ implicit throughout entire design
- Reframe becomes a reframing of both *content and form*
- Design is the process; deliverable becomes what is needed for organizational learning - not necessarily a planning deliverable
- Displacement of concepts encouraged
- Emergent strategy; *emergent design frames available*
- What is needed will be discovered during the design
Passing beyond the edge of the known map puts the explorer in discovery mode with only emergent strategies and unpredictable opportunities. The compass aids in rendering a new map, yet in the act of making a new map, the explorer takes a new journey that is not sequential, in different directions.

Drift occurs (emergence, complexity, adaptation) yet the map provides stability and predictability to even the roughest seas. The merchant uses experience and sequential processes to accomplish difficult journeys over familiar terrain.

http://static.tvtropes.org/pmwiki/pub/images/rsz_world-flat_5884.jpg
Army Design
Methodology might have: N= Environmental Frame; S= Problem Frame; E= Operational Approach; W= Reframe

Systemic Operational Design might have: N= Rival as Rationale; S= Command as Rationale; E= Logistics as Rationale; W= Operation Framing

An Adaptive Campaign Model might have: N= Act; S= Sense; E= Decide; W= Act

A Civilian Inspired Design Model might have: N= Empathize; S= Ideate; E= Prototype; W= Test (with additional steps as needed)
Figure 10: Nonlinear Design Process for Second Generation Design Models

One Design iteration might move from N, E, S, W, and exit with a deliverable....

Another might begin with E, then move to W, then N, back to E, then exit without using S...

Some design journeys might have extensive paths all over the compass....

Every second generation design process is independent of all others...
The first iteration might use a SOD structure at first...

With the first re-frame abandoning some of the SOD concepts and adding civilian design components...

Later in the process, some emergent design experimentations in reframes might introduce novel design concepts previously unexplored.

The final design iteration might require an emergent methodology that cannot be understood at the beginning of the design. *These reframes change the design methodology (the form) with the content*
Conclusions:

**Explorer with Compass and Edge of Map**

**Merchant with Map and Compass**

Second Generation Design Models:
- Complex Adaptive Contexts
- Emergence
- Learning through Design
- Epistemology forces methodological adaptation/innovation
- Novel discovery tends to be misunderstood by merchants seeking things already on the map

Analytic Based decision-making and problem-solving:
- Simple and complicated contexts
- Gaining stability provides for predictive methodologies
- Vulnerable to change, complacency and adaptation
- Many military processes require this

http://static.tvtropes.org/pmwiki/pub/images/rsz_world-flat_5884.jpg
Questions?