Reclaiming Rapid Cognition

Improving Decision-making in Command and Control Agencies by Understanding and Enabling Rapid Cognition

Presentation 206

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From Operation Enduring Freedom

- Austere, Mobile Environment
To Operation Iraqi Freedom

- Stationary, Data Heavy Environment
Effects of Technology

- Battlefield Picture in Real Time
- Can see individual units
- Faster Communications
- Demand for constant updates
- Demand for immediate response to senior’s requests
Reclaiming Rapid Cognition Overview

- What is Rapid Cognition?
- Training Rapid Cognition Decision-Makers
- Getting Back to Basics—Enabling the Executors
- Why it Matters What Our Architecture Looks Like
- Leadership as a Network Property
What is Rapid Cognition?

“I see only one move ahead, but it is the correct one.”-Jose Raul Capablanca, Chess Grandmaster
Deciding Advantageously Before Knowing the Advantageous Strategy (1997)

- Rigged Decks
- From cards 10-20, after few losses, anticipatory SCRs
- By card 50, subjects had hunch
- By card 80 subjects could verbalize strategy
- Subjects began to choose advantageously before they realized which strategy worked best
Two Types of Decision-Making

**Comp Analysis**
- Unconscious
  - Opt 1
  - Opt 2
- Conscious
  - Correct Decision

**Rapid Cognition**
- Unconscious
  - Correct Decision

**Novel Option**
- Unconscious
  - Incorrect Decision
Rapid Cognition Decision-Making in Experts

• Experts have training and experience to both read situation and act correctly
• Can diagnose errors in their solutions sooner
“Yet this belief in the importance of innate talent, strongest perhaps among the experts themselves and their trainers, is strangely lacking in hard evidence to substantiate it . . . The preponderance of psychological evidence indicates that experts are made, not born.” –Philip E. Ross
Training the Components

• Knowledge Bank
  – Academic knowledge

• Experiential Knowledge
  – Allows the organization of knowledge

• Simulation Training
  – Identifies problems
  – Overcomes stress reactions
Experts don’t know significantly more, they just access it more efficiently

Figure 37.1. Activation of the brain, as a function of practice, in three periods of learning a motor tracking task. This is a maximum projection image, with white areas showing the activation of any cortical area either above or below the illustrated brain slice. The image is an axial (aerial) view of the head, where the top of the image corresponds to the front (nose) of the head and the bottom corresponds to the back of the head. The frontal areas (dashed ellipse) and parietal attention control areas (solid ellipse) show dramatic reductions in activation. The motor areas (middle of images) share fairly preserved activation.
Training the Components

• Knowledge Bank
  – Academic knowledge
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Getting Back to Basics—Enabling the Executors

“You’ve got to let people work out the situation, work out what’s happening. The danger in calling is that they’ll tell you anything to get you off their backs, and if you act on that and take it at face value, you could make a mistake. Plus, you are diverting them. Now they are looking upward instead of downward. You’re preventing them from resolving the situation.” –LtGen Paul VanRiper, USMC Retired
Thinking Too Much: Introspection Can Reduce the Quality of Preferences and Decisions (1991)

- Introspecting about decisions to take psych courses caused students to weight information in a less than optimal way and to make less optimal choices.
Effects of Verbal Descriptions

- Brown hair
- Deep set eyes
- Oblong, angular face
- Dimples
- Large cheeks
- Pronounced chin
- Fair complexion
The Verbal Overshadowing Effect: Why Descriptions Impair Face Recognition (1997)

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Why It Matters What Our Architecture Looks Like

“Networks have properties hidden in their construction, that limit or enhance our ability to do things with them.” –Dr. Albert-Laszlo Barabasi
Genesis of Network Theory
All these networks have similar topologies, regardless of the character.
C2 Networks are Scale-Free, Fitness-based

- C2 have hubs--defining trait
- Are actually fractals
- Properties of a human network
Leadership as a Network Property

“This is not to say that individual qualities are not important, but rather that sustainable and replicable qualities of leadership are treated here as a network property, made possible by the combination of the social network and the individuals themselves.” - Dr. John H. Clippinger
How do we train Network Leaders?

LEADERSHIP

INNATE TRAITS

- ACADEMIC STUDY (PASSIVE)
- FACTUAL/DOCTRINAL
- CASE STUDY

ORGANIZATIONAL CONTEXT

- SIMULATION (ACTIVE)
Practical Example

- MACCS - Marine Aviation Command and Control System
- TACC - Tactical Air Command Center (Senior Agency)
- DASC - Direct Air Support Center
- TAOC - Tactical Air Operations Center
- FSCC - Fire Support Coordination Center
Conclusion
It is a profoundly erroneous truism, repeated by all copybooks and by eminent people when they are making speeches, that we should cultivate the habit of thinking about what we are doing. The precise opposite is the case. Civilization advances by extending the numbers of important operations which we can perform without thinking about them. Operations of thought are like cavalry charges in battle--they are strictly limited in number, they require fresh horses, and must only be made at decisive moments.

- Alfred North Whitehead

When making a decision of minor importance, I have always found it advantageous to consider all the pros and cons. In vital matters, however, such as the choice of a mate or a profession, the decision should come from the unconscious, from somewhere within ourselves. In the important decisions of personal life, we should be governed, I think, by the deep inner needs of our nature."

- Sigmund Freud