Human and Organisational Issues

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Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18
• C2 is distinguished by the human dimension;
• Maximizing the likelihood of mission accomplishment demands a C2 system characterized by efficient interaction between humans, organization, and technology;
• Human and organizational issues are central to structuring C2 problems and therefore need to be considered from the very beginning of a study in an iterative manner.
Human and Organisational Factors

Underlined numbers (3) refer to chapters of the COBP
Shaded box indicates the current chapter

STRUCTURAL RELATIONSHIPS OF CODE SECTIONS

Key features:
- Non-linear
- Iterative
Key Considerations

- Addressing human and organisational issues adds complexity
- Relevance of human and organisational factors for the C2 assessment problem
- Availability of empirical evidence and human science expertise
- Parametric treatment of factors versus explicit modelling of human behaviour
Human Factor Categories

- Human behaviour
- Decision making behaviour
- Command style
• Human performance factors
  – psycho-physiological (stress, fatigue, hunger)
  – ergonomic/external factors limiting performance

• Social interactions among individuals and groups
  – psychological processes
  – background (cultural, educational, religious)
  – social and work competence and experience
Decision Making Behaviour

- **Type of decision**
  - simple (automatable: decision rules or algorithms)
  - contingent (accounting for value added by information about operational environment)
  - complex (involving fundamental changes when no doctrinal guidance exists)

- **Cognitive factors** (complexity of issues, perception of environment)

- **Capacity of commanders and other decision makers** (training and experience)
Command Style

• Attributes of commander
  – background (training, operational experience)
  – leadership (motivational capability, moral integrity)
  – risk attitude

• Organisational style
  – decomposition, hierarchic
  – holistic, centralised,

• Command philosophy
  – mission-oriented versus order-oriented
  – analytic versus holistic
Human Behaviour and OOTW

- Human behaviour is more critical
  - tactical-level of decisions may have strategic consequences (media presence)
- Multitude of parties and groups
  - (para)military, political/ethnical/religious groups, amorphous groupings, aid organisations (IO, NGO)
  - diverging interests, different behavioural patterns
- Perceptions of military actions more important than their physical effects
Organisational Factors

- Structure of organisation
- Functional responsibility
- Operational capacity
Structure of Organisation

- Number of command echelons
- Span of control for command nodes
- Linkage of nodes
  - hierarchical, spokes of a wheel, multi-connected, networked
  - permanent versus transitory relationships
  - formal versus informal relationships
Functional Responsibility

• Distribution of responsibility
  – location of functional activities (e.g., intelligence, logistics, CIMIC)
  – distribution of authority
  – functional specificity (warfare domain task forces for combined operations) versus integrated capabilities (mission tailored task forces for joint operations)

• Degree of ambiguity in command relationships
Operational Capacity

- Personnel (background, training, experience)
- Communication systems and architectures
- Information processing systems and architectures
- Operational field experience
C2 Analysis Problem in OOTW

• C2 in OOTW: complex interactions of tightly coupled human, organisational, and technological factors and processes;

• Analyst is faced with a (theoretically) large set of complex options;

• Analysis problem: management of complexity to arrive at efficient options;

• Approach: Integrated Analysis
Integrated Analysis

• Integrated Analysis implies iterative testing of hypotheses on related sets of key parameters
  – starting with few aggregated parameters that cover the theoretically possible range of options;
  – narrowing, in each iteration, the bounds for subsequent testing of related sets of ever more disaggregated parameters;

• Hypotheses must include decision strategy options in the operational context of analysis.
Decision-making Drivers

The diagram illustrates the relationship between complexity, time available, and uncertainty in decision-making scenarios. It shows the least desirable situation at the bottom left, involving high complexity, short time available, and high uncertainty. Conversely, the most desirable situation is at the top right, with low complexity, ample time available, and low uncertainty.
Operational Decision Strategy

- Objective: staying ahead of situational change (pro-active decisions);
- Dilemma: shortening C2 loop (OODA) means greater situational uncertainty (risk of counter-productive decisions);
- Decision strategy: buying sufficient time for OODA through short-term (delaying) actions;
- Sufficiency criterion: maximise probability of mission success.
Human Issues in the Assessment

- Addressing human and organisational issues requires interdisciplinary analysis involving different scientific cultures;
- Project leader must be aware of the current state of the disciplines involved;
- Good personal and working relationship with customer of analysis are essential;
- Early working relationships with subjects of, or affected by, assessment are important.
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