

Threat and Control in Military Decision Making

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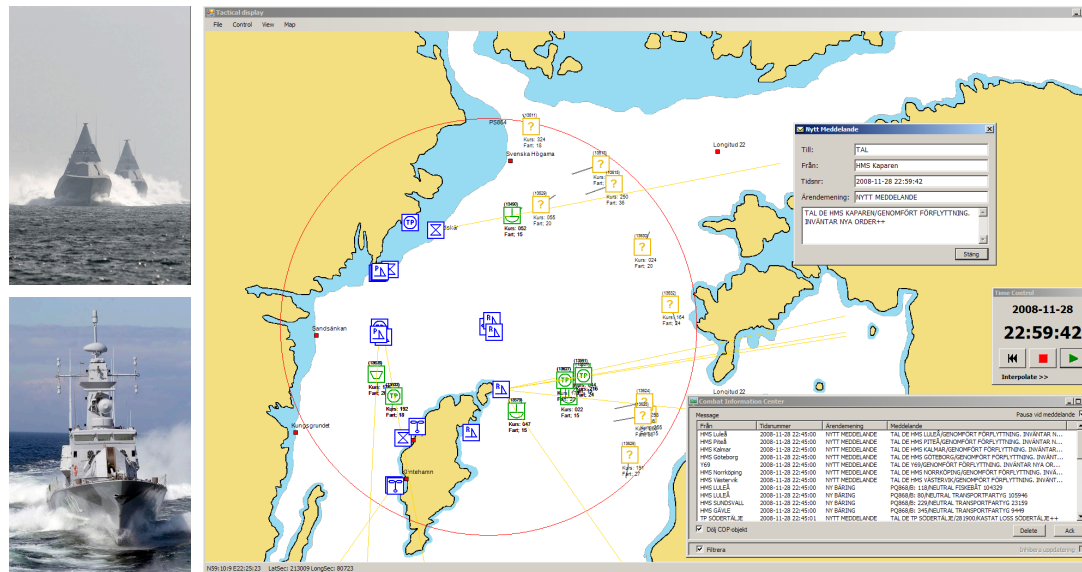
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Purpose

Provide the groundwork for a computer based decision support system for tactical decision making in the navy

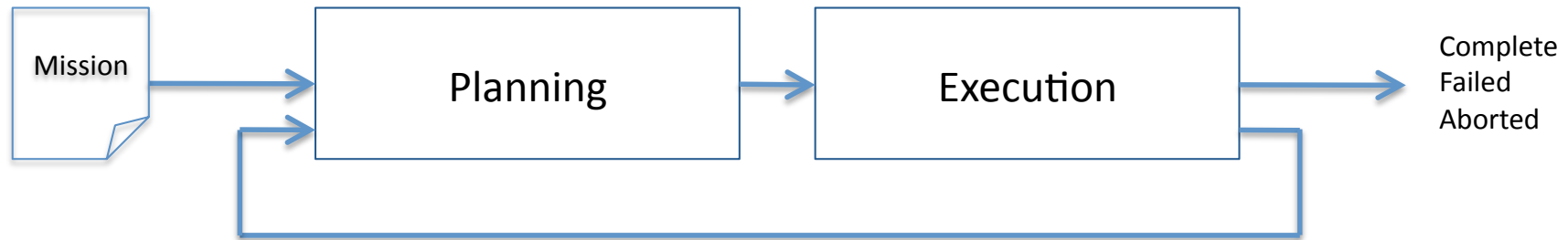
Aim

Descriptive account of military decision making

Military decision making

Command and **Control** (C2) are terms used to describe what a commander does when he or she commands a military mission.

A simple way to describe command and control



There is, in the first place, the gathering of information on the state of one's own forces [...] as well as the enemy and on external factors as the weather and the terrain. [...] Means must be found to store, retrieve, filter, classify, distribute, and display it. [...] An estimate of the situation must be formed. Objectives must be laid down and alternative methods for attaining them worked out. A decision must be made. Detailed planning must be under way. Orders must be drafted and transmitted, their arrival and proper understanding by the recipients verified. Execution must be monitored by means of a feedback system, at which point the process repeats itself.

(van Crefelt, 1985)

Empirical work on military decision making

Naturalistic Decision Making

Studies real decision makers in a "naturalistic setting"

1. The problem is ill-structured
2. The environment must be uncertain and dynamic.
3. The goals are shifting, ill-defined or competing.
4. Feedback loops make earlier decisions impact on later decisions.
5. There is time pressure
6. The stakes are high in such a way that the decision maker is concerned about the effects of his or her decision in a higher degree than the subjects studied in laboratories.
7. Several people have an influence on the decision.
8. The decision-making process takes place in an organizational setting.

- Field studies
- Naturalistic simulations

Dynamic Decision Making

Studies how people interact with systems that are opaque, interconnected and dynamic

1. Opaque
 - a. The state of the system can not be immediately ascertained
 - b. The decision maker must take actions to reveal the state
2. Interconnected
 - a. All effects have side effects
 - b. Side effects makes it impossible to reach all goals simultaneously → goal trade-offs
3. Dynamic
 - a. The state of the system is a result of the history of interactions between the decision maker and the system
 - b. Make series of decision where each decision is dependent upon the others
 - c. The system changes both autonomously and as a result of the decision makers actions
 - d. Time is an important factor

- Laboratory studies using "microworlds" – computer "simulations"

Method

- Descriptive account of threat and control
- Semi-structured interviews
- Participants were 9 Swedish navy officers
 - 1 Chief of Navy
 - 1 Chief of Fleet
 - 2 Flotilla Commanders
 - 3 Division Commanders
 - 2 Commanding Officer of Warship

23 questions were derived from the activities prescribed in the Swedish Navy Planning Manual and covered both planning and execution.

“Describe how you figure what must be accomplished”

“Describe how you analyze the enemy forces”

. . .

Planning

- 1 What must be accomplished
- 2 Freedom of action
- 3 Uncertainties
- 4 Immediate actions
- 5 Success factors
- 6 Civilian forces
- 7 Own forces
- 8 Enemy forces
- 9 Third party
- 10 Terrain, weather, visibility
- 11 Comparison of forces
- 12 Enemy courses of action
- 13 Develop own course of action
- 14 Selection of course of action
- 15 Wargaming

Execution

- 16 Monitor the situation
 - a. Civilian forces
 - b. Own forces
 - c. Enemy forces
 - d. Third party
 - e. Weather, terrain, visibility
- 17 Decide whether it proceeds according to plan
- 18 Decide whether changes are needed within current plan
- 19 Decide whether it deviates to such extent that a new plan is needed
- 20 Decide whether an opportunity has developed
- 21 Enemy courses of action
- 22 Own courses of action
- 23 Wargaming

Method continued

Interviews were analyzed using content analysis

Statements containing words “threat”, “danger”, “risk” and “uncertainty” were excerpted

Statements regarding same issues were sorted in categories

Each category were further reduced to even simpler statements.

These statements were used to create a model of threat and control

And as I was saying, the dialogue as such can be difficult and that is mainly related to that you must understand where in the larger context this mission fits in. And at the same time get an idea of the importance of the mission. That is, it has to do with the level of risk, because it is so to say the safety of own units that is (really) important, you cannot allow it to become a kamikaze-mission but you have to know what weight the higher command assigns this mission. And it relates to the context. What is the importance of this mission, and that sets the level of risk you must be prepared to take.

Interpretation:

| Id | Statement | Subject |
|-----------|---|----------------|
| 1. | The level of risk is proportional to the importance of the mission | Capt A |
| 2. | The importance of the mission is determined by its role in the larger mission structure | Capt A |

R1: The acceptable level of risk is proportional to the importance of the mission

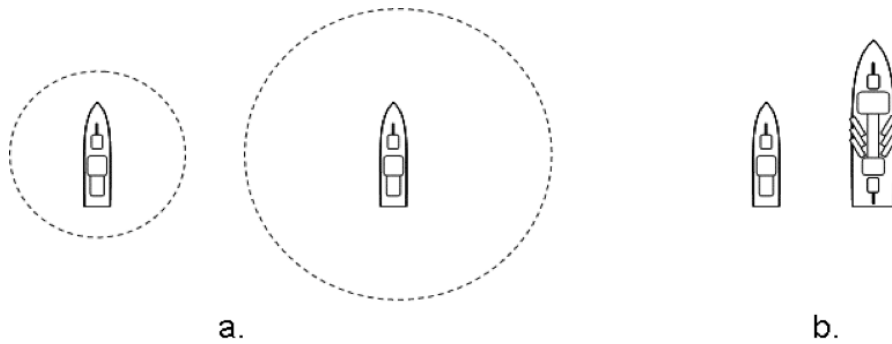
Results

1. Threat is determined by the **number** of the enemy forces, the **types** and their **behavior**
2. Threat is also determined by the **uncertainty** regarding the number, the types and the behavior of the enemy.
3. Uncertainty regarding the threat is coped with by **worst-case reasoning**.

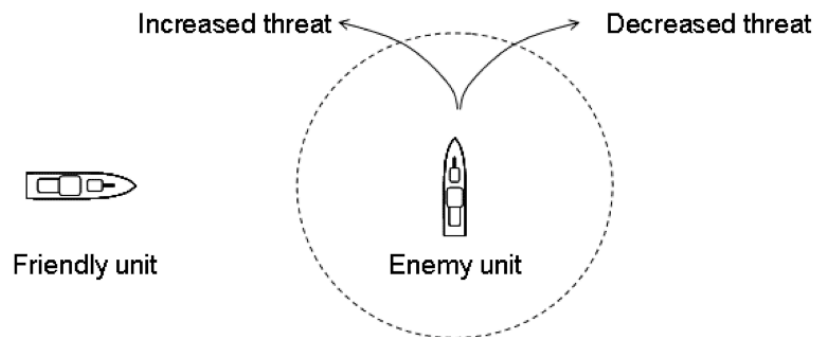
The more uncertain the commander is about any of the enemy number, types or behavior the more the commander reasons as if the worst plausible case were at hand.

4. Threat is controlled by the own force and its course of action

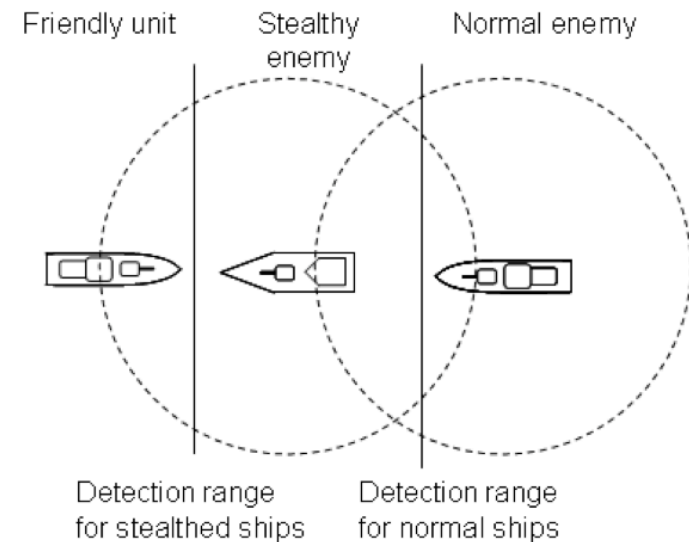
Threat posed by a unit



Sensor and weapon capability determines threat

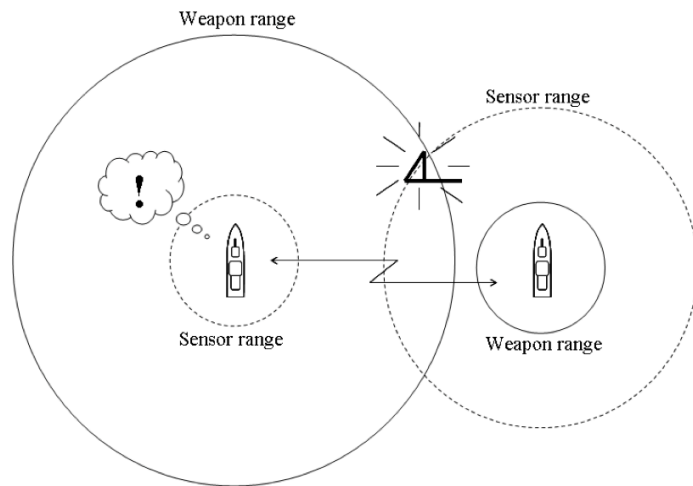


The behavior of a unit determines its threat

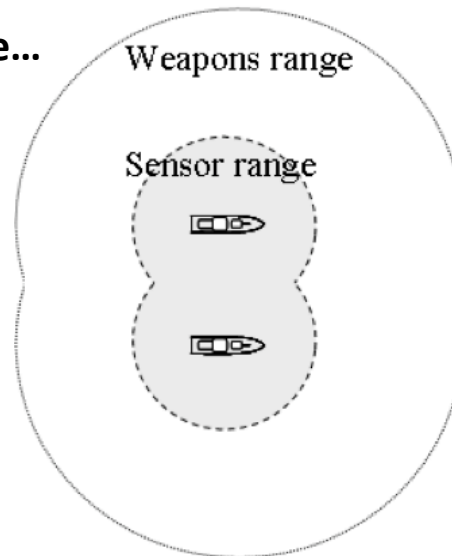


A stealthy unit is more threatening

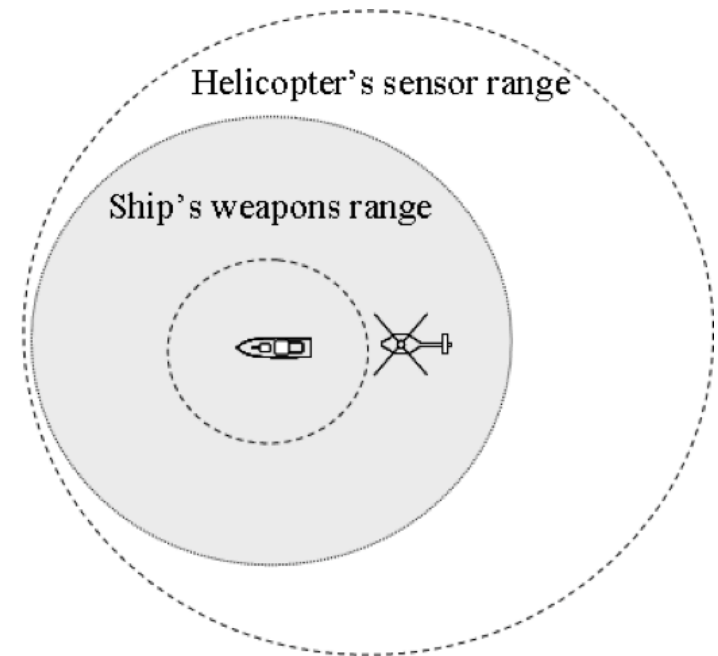
Target sharing can influence threat



Target sharing within a force...



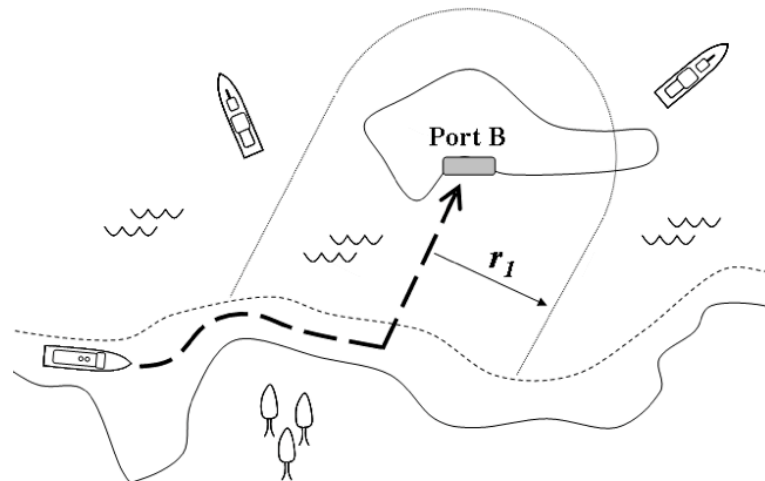
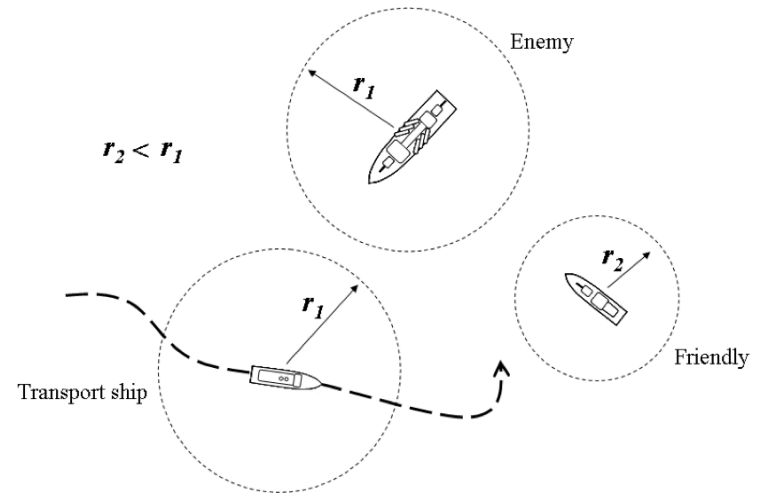
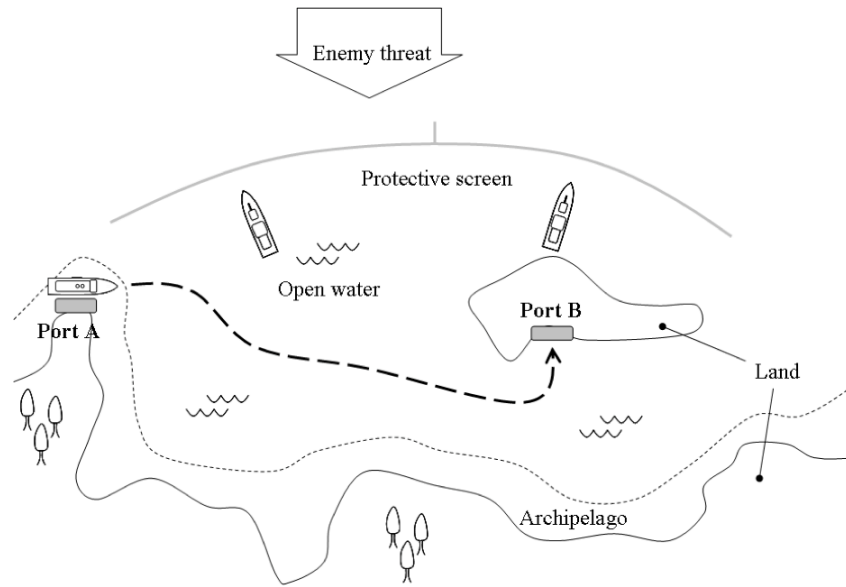
a.



b.

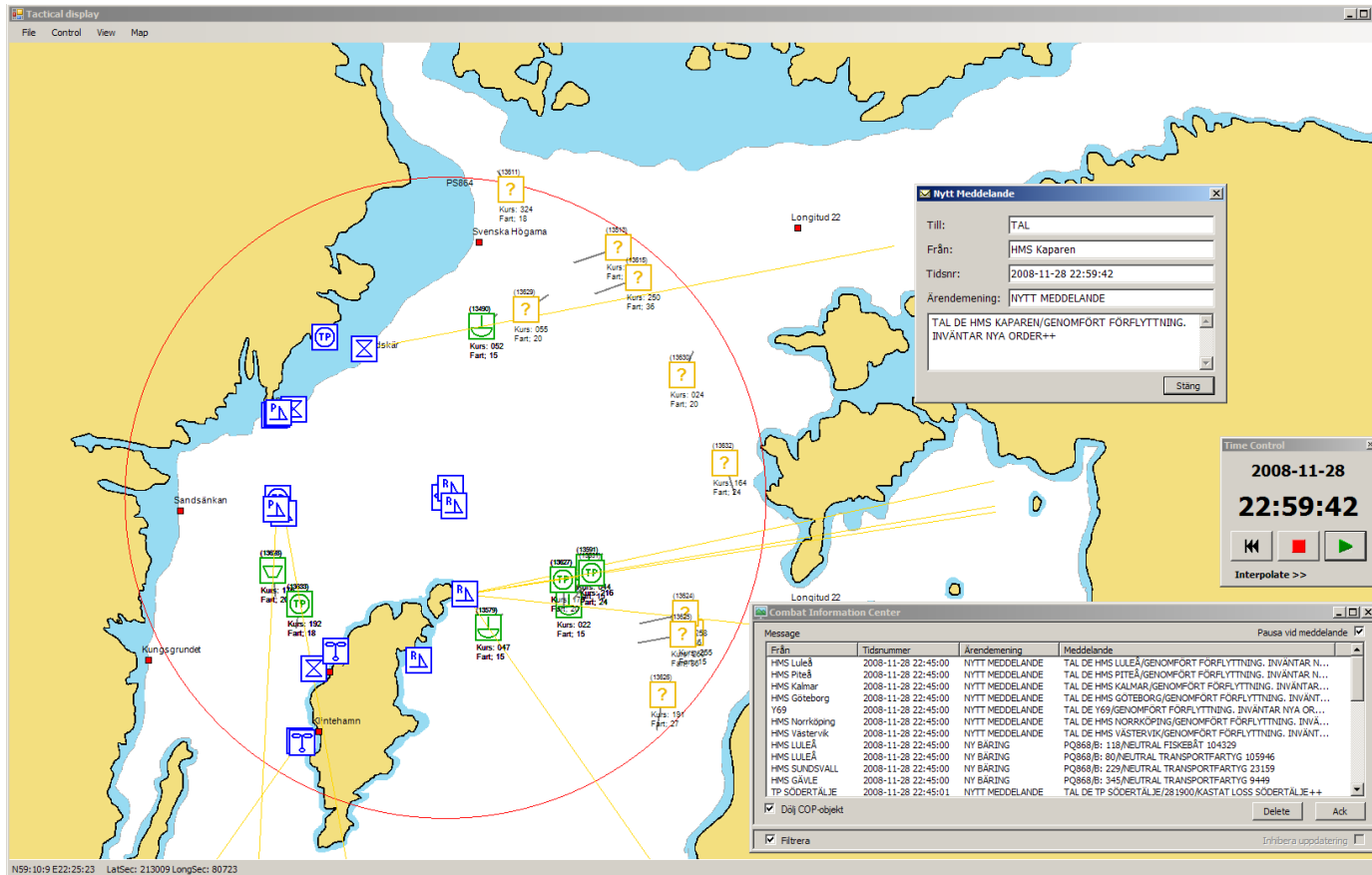
...can make "weaker" forces to become more threatening

Threat is controlled by own force and its course of action



Current work

Moving towards studies using microworlds...



...a bit more of this on the poster