

The purposes of operations planning: an analytical framework

Paddy Turner, Lorraine Dodd & Geoff Markham
pjturner1@qinetiq.com

31st International Symposium on Military Operational Research

Tuesday 29th July 2014

Aim and rationale

Aim to offer insights into the functions and purposes of military planning – as part of a proposed analytical framework

Rationale is to provide a better foundation for identifying areas for planning capability improvement

Intent of presentation is to generate dialogue:

- What is (the essence of) planning?
- Why does planning take place?

Original research

Builds upon MOD Command, Inform and Battlespace Management (CIBM) research:

- Task 8, Planning & Decision Support
- Task 10, C2 Agility

Descriptive research into military planning

Typical problem: “How can we improve military planning capability?”

Descriptive research seeks to understand planning *as it is actually conducted*

Planning as a complex socio-technical endeavour

Research requires multiple ‘ways of seeing’

Aided by lenses, e.g.:

Lens	Key Question	Aspects illuminated
Socio-structural	How are planners organised?	How the work of planning is structured within a HQ and between actors; also the planning of deployed organisations (e.g. <i>roles, branches, groups</i>).
Computational	What problems do planners solve?	An abstract model of the 'planning problem' and of the computations necessary to 'solve' it.

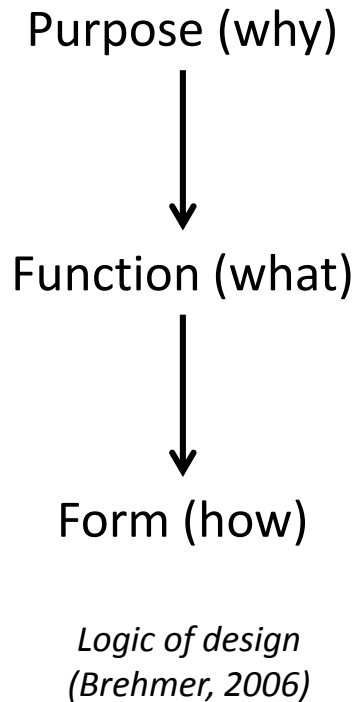
Planning patterns

- Well-defined, repeatable and observable elements of planning practice, e.g. activity, role/structure, product
- Resolve tensions between conflicting requirements and/or constraints
- Describe *forms* of planning and thereby address “how is planning done?”
- Based on Christopher Alexander’s concept of patterns in architecture

Liaison Officer	
<i>TENSIONS</i>	<i>PATTERN</i>
<ul style="list-style-type: none">• <i>Need for deconflicted, co-ordinated or collaborative action between components</i>• <i>Different C2 and planning cycles</i>• <i>Different military cultures</i>• <i>Other (competing) requirements for use of assets</i>• <i>(Asymmetric) time-pressure</i>	<ul style="list-style-type: none">• <i>Parent Commander’s decision-making representative in host HQ</i>• <i>Acute awareness of differences and opportunities, ‘culturally sensitive’</i>• <i>Provides the ‘elastic’ between components</i>

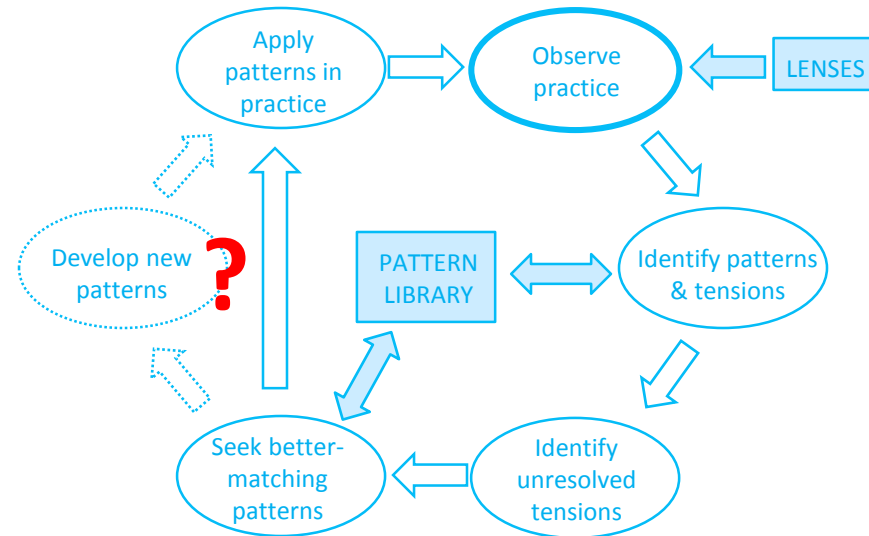
Example planning pattern

Logic of design vs. original analytical framework



*PATTERNS,
TENSIONS, LENSES*

*Original analytical
framework*



*Original research
approach*

Towards functions and purposes: C2 agility

“C2 agility is
the contribution of command and control
to the ability of military forces
to respond effectively to planned and unanticipated changes
in either circumstances or operating conditions.”

CIBM Task 10 Final Report

Towards functions and purposes: applying C2 agility research

Clearly, planning plays a role in enacting C2 agility

C2 agility research provides a source of ‘insights into *functions* of planning’ – defined as *facets of planning*

Remainder of presentation:

- Defines the focus – *operations planning*
- Introduces *facets* (with support from observations)
- Maps facets to *super-tensions* – universal problems that planning must contend with
- Reasons about associated *purposes* of planning

Focus: operations planning

1. Pertains to a specific operation or mission
2. Concerned with both:
 - a. Meeting the commander's intent
 - b. Adaptation in the face of changing circumstances**
3. Seeks to design:
 - a. Actions that must be performed in the environment
 - b. The C2 organization (e.g. one or more Headquarters) that is competent to direct and control these actions in a coherent manner**
 - c. Necessary relationships with all assets and resources to be employed**
4. Conducted by military commanders and staff, in conjunction with non-military partners
5. Conducted both *prior to* and *during* operations.

Facets of planning

Provisional and deferred commitments

Fixing actions, C2 organization and assets

Computation and performance

Command, leadership and governance

Understanding, planning and action

Harnessing expertise

Collaboration

Treatment of uncertainty

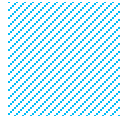
Provisional and deferred commitments

Planning viewed as a phased process of 'commitment to action'

Plans include three types of elements:



Definitive
Articulated in full

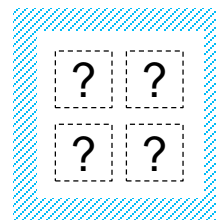


Provisional
Articulated in full,
expected to be changed
later

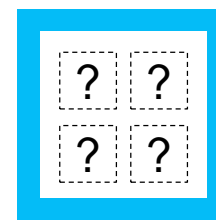


Deferred
Not fully
articulated

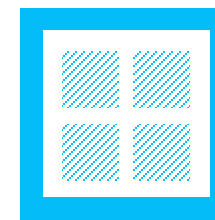
Outputs from any planning phase may be:



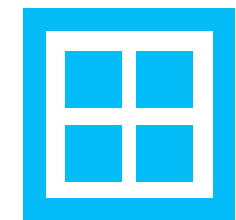
Provisional
in outline,
details
deferred



Definitive in
outline but
details
deferred



Definitive in
outline,
details
provisional



Detailed and
definitive

Agility enabled by 'late commitment', exploiting fact that some things can be adjusted rapidly

Phased commitments made in context of planning cycles and organizational levels:

- Planning cycles inherit (consequences of) plans from previous cycles
- Planning at one level conducted according to objectives and within constraints set by higher level

Computation and performance

Planning viewed as 'plan construction'

- “what are the planning steps?” and
- “what is done to the plan?”

The objective, the situation and any constraints must be represented in a form that permits computation

Implicit assumptions:

- Understanding the situation must precede detailed planning
- The planning problem is complicated but not complex

Example – Three Column Format

Command, leadership and governance

Planning viewed as 'development and adherence to a framework of command decision-making'

- 'Allocation of decision rights' – authority and responsibility
- Exercise of command and leadership
- Greater focus on planning the C2 organization rather than actions in the environment

Example – Command Arrangements

Example – Inter-Component Co-ordination & Liaison

Understanding, planning and action

Planning viewed as 'enabling learning'

Developing understanding is an important aspect of planning rather than merely a side-effect

Complexity as a driver

- Understanding the situation cannot wholly precede action – nor planning
- Understanding the situation, the complex of actors and the response

“In preparing for battle I have always found that plans are useless, but planning is indispensable.”

Dwight D. Eisenhower

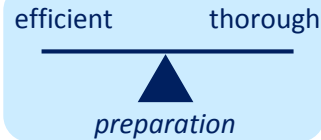
Different types of action:

- To effect desired outcomes
- Collecting information (passive)
- Probing or “shaking the tree” (active)

Suggests that planning must establish a framework for learning that goes beyond the assessment of achievement of desired outcomes

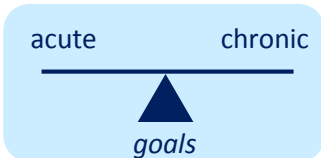
Super-tensions

More efficient planning processes,
allowing acting to begin earlier



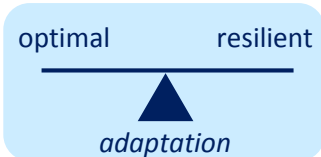
More thorough planning processes,
addressing more factors, risks etc.

A greater focus on acute,
'faster-better-cheaper' goals



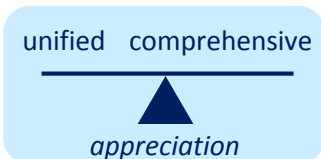
A greater focus on enduring properties,
e.g. robustness

Optimising the fit of C2 organizations for
specific scenarios



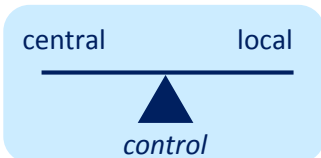
Ensuring the resilience of C2 organizations
in the face of unpredictable demands

That situational appreciations
are unified



That the set of appreciations is
(collectively) comprehensive

Co-ordinating activities to achieve greater
goals with given resources



The ability to adapt plans
opportunistically to local conditions

CIBM Task 8 Final Report, based on Hoffman & Woods

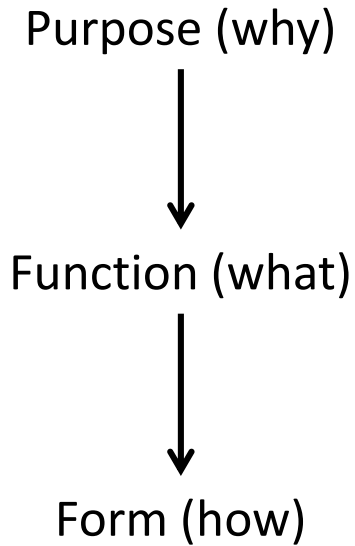
Mapping facets to super-tensions

	Provisional and deferred commitments	Fixing actions, C2 organization and assets	Computation and performance	Command, leadership and governance	Understanding, planning and action	Harnessing expertise	Collaboration	Treatment of uncertainty
<div style="border: 1px solid #0070C0; border-radius: 10px; padding: 10px; background-color: #E6F2FF;"> <div style="display: flex; justify-content: space-between; font-weight: bold;"> efficient thorough </div> <hr style="border: 0.5px solid #0070C0; margin: 5px 0;"/> <div style="text-align: center; font-weight: bold; color: #0070C0;">▲</div> <p style="text-align: center; font-style: italic; color: #0070C0;">preparation</p> </div>	✓	✓	✓		✓	✓		✓
<div style="border: 1px solid #0070C0; border-radius: 10px; padding: 10px; background-color: #E6F2FF;"> <div style="display: flex; justify-content: space-between; font-weight: bold;"> acute chronic </div> <hr style="border: 0.5px solid #0070C0; margin: 5px 0;"/> <div style="text-align: center; font-weight: bold; color: #0070C0;">▲</div> <p style="text-align: center; font-style: italic; color: #0070C0;">goals</p> </div>	✓		✓					✓
<div style="border: 1px solid #0070C0; border-radius: 10px; padding: 10px; background-color: #E6F2FF;"> <div style="display: flex; justify-content: space-between; font-weight: bold;"> optimal resilient </div> <hr style="border: 0.5px solid #0070C0; margin: 5px 0;"/> <div style="text-align: center; font-weight: bold; color: #0070C0;">▲</div> <p style="text-align: center; font-style: italic; color: #0070C0;">adaptation</p> </div>	✓	✓	✓	✓	✓	✓	✓	✓
<div style="border: 1px solid #0070C0; border-radius: 10px; padding: 10px; background-color: #E6F2FF;"> <div style="display: flex; justify-content: space-between; font-weight: bold;"> unified comprehensive </div> <hr style="border: 0.5px solid #0070C0; margin: 5px 0;"/> <div style="text-align: center; font-weight: bold; color: #0070C0;">▲</div> <p style="text-align: center; font-style: italic; color: #0070C0;">appreciation</p> </div>			✓		✓	✓	✓	✓
<div style="border: 1px solid #0070C0; border-radius: 10px; padding: 10px; background-color: #E6F2FF;"> <div style="display: flex; justify-content: space-between; font-weight: bold;"> central local </div> <hr style="border: 0.5px solid #0070C0; margin: 5px 0;"/> <div style="text-align: center; font-weight: bold; color: #0070C0;">▲</div> <p style="text-align: center; font-style: italic; color: #0070C0;">control</p> </div>	✓	✓		✓	✓			

Purposes of planning

1. To describe actions to be taken in the environment – the ‘moving parts’ of the operation or mission
2. To determine the ‘soundness’ of the plan of actions to be taken
3. To identify gaps in understanding which inhibit planning or which imply risks to soundness
4. To plan activities in support of learning (including further information collection actions)
5. To (re-)evaluate intent (with both computational and social dimensions)
6. To identify the assets, resources and services that are needed
7. To ensure the possession / allocation of assets and resources
8. To ensure that the use of assets, resources and services satisfies political and organizational requirements
9. To define the C2 organization
10. To determine the ‘soundness’ of the planned C2 organization
11. To understand the situation through an appreciation of possible / intended action
12. To understand the situation through recognition, relating it to previous experience
13. To enable the C2 organization to carry out the planned operation or mission
14. To justify changes in policy, objectives, constraints and allocation
15. To effect command and leadership (e.g. by communicating intent)
16. To fulfil requirements for due process

Logic of design vs. proposed analytical framework



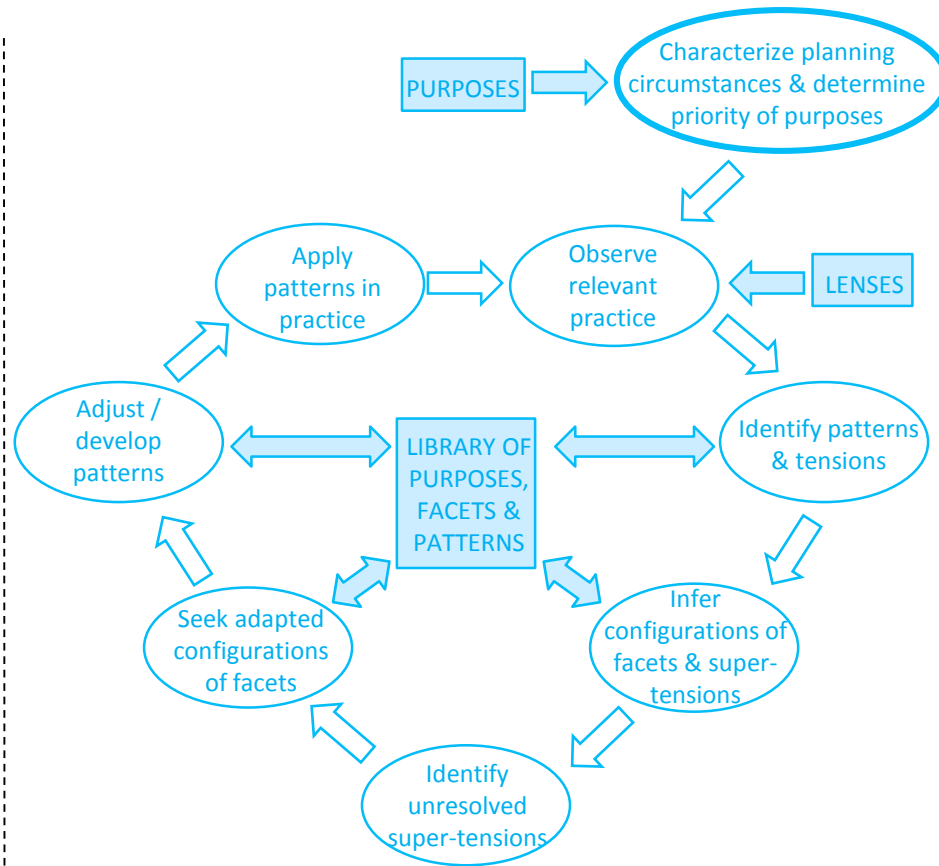
*Logic of design
(Brehmer, 2006)*

PURPOSES

FACETS & SUPER-TENSIONS

*PATTERNS,
TENSIONS, LENSES*

*Proposed analytical
framework*



*Proposed research
approach*

Questions?

Paddy Turner
pjturner1@qinetiq.com